

QST

June 1959

50 Cents

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amateur radio



COMING — FULL IN THIS ISSUE



UTC NEW EXPANDED

Revolutionary
hermetically sealed

DI-T AND DI-T SERIES

Translator MIL-T-27A

SERIES

UTC DI-T and DI-T translator transformers provide unprecedented power handling capacity and reliability coupled with extremely small size. Comparative performance with other available products of similar size are shown in the curves (based on setting output power at 1 KC, then maintaining same input level over frequency range). The new expanded series of units cover virtually every translator application.

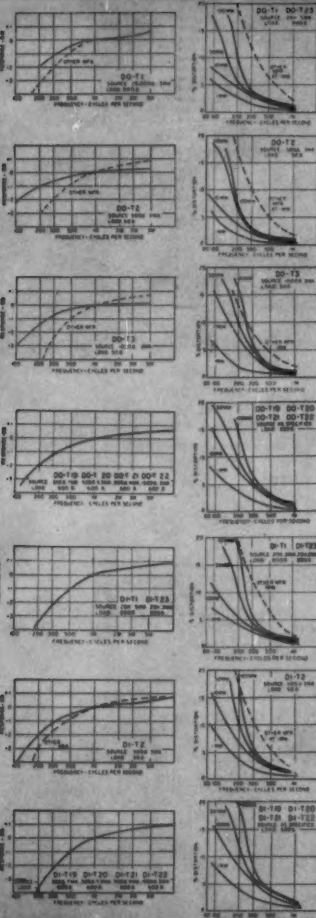


Wide Power Rating . . . up to 2500 watts
Excellent Response . . . better than vacuum tube

Low Distortion . . . reduced to 5%
High Efficiency . . . up to 50%
Robustness Proven . . . hermetically sealed MIL-T-27A

Designed completely around
standard loads . . . 500 CT, 1000 CT, 1500 CT, 2000 CT, 3000 CT, 4000 CT, 5000 CT, 6000 CT, 7000 CT, 8000 CT, 9000 CT, 10000 CT

Reduced Check the



DI-T No.	MIL Type	Application	Pri. Imp.	D.C. Ma.†	Sec. Imp.	Pri. Res.	Pri. Res. Lvs.	Level	DI-T
DI-T1	TF4RX13YY	Interstage	20,000 30,000	5 5	800 1200	850	815	50	DI-T1
DI-T2	TF4RX17YY	Output	500 600	3 3	50 60	60	65	100	DI-T2
DI-T3	TF4RX13YY	Output	1000 1200	3 3	50 60	115	110	100	DI-T3
DI-T4	TF4RX17YY	Output	600	3	3.2	60		100	
DI-T5	TF4RX13YY	Output	1200	2	3.2	115	110	100	DI-T5
DI-T6	TF4RX13YY	Output	10,000	1	3.2	790		100	
DI-T7	TF4RX16YY	Input	200,000	0	1000	8500		25	
DI-T8	TF4RX20YY	Reactor 3.5 Hys. @ 2 Ma. DC, 1 Hy. @ 5 Ma. DC				630			DI-T8
DI-T9	TF4RX20YY	Reactor 2.5 Hys. @ 2 Ma. DC, 9 Hy. @ 4 Ma. DC				630			DI-T9
DI-T10	TF4RX13YY	Output or driver	10,000 12,000	1 1	500 CT 600 CT	800	870	100	DI-T10
DI-T11	TF4RX13YY	Driver	10,000 12,000	1 1	1200 CT 1500 CT	800	870	100	DI-T11
DI-T12	TF4RX17YY	Single or PP output	150 CT 200 CT	10 10	12 16	11		500	
DI-T13	TF4RX17YY	Single or PP output	300 CT 400 CT	7 7	12 16	20		500	
DI-T14	TF4RX17YY	Single or PP output	600 CT 800 CT	5 5	12 16	43		500	
DI-T15	TF4RX17YY	Single or PP output	800 CT 1070 CT	4 4	12 16	51		500	
DI-T16	TF4RX13YY	Single or PP output	1000 CT 1330 CT	3.5 3.5	12 16	71		500	
DI-T17	TF4RX13YY	Single or PP output	1500 CT 2000 CT	3 3	12 16	108		500	
DI-T18	TF4RX13YY	Single or PP output	7500 CT 10,000 CT	1 1	12 16	505		500	
DI-T19	TF4RX17YY	Output to line	300 CT	7	600	19	20	500	DI-T19
DI-T20	TF4RX17YY	Output or line to line	500 CT	5.5	600	31	32	500	DI-T20
DI-T21	TF4RX17YY	Output to line	900 CT	4	600	53	53	500	DI-T21
DI-T22	TF4RX13YY	Output to line	1500 CT	3	600	86	87	500	DI-T22
DI-T23	TF4RX13YY	Interstage	20,000 30,000	5 5	800 CT 1200 CT	850	815	100	DI-T23
DI-T24	TF4RX16YY	Input (usable for chopper service)	200,000	0	1000 CT	8500		25	
DI-T25	TF4RX13YY	Interstage	10,000 CT 12,000 CT	1 1	1500 CT 1800 CT	800	870	100	DI-T25
DI-T26	TF4RX20YY	Reactor 6 Hy. @ 2 Ma. DC, 1.5 Hy. @ 5 Ma. DC				2100			DI-T26
DI-T27	TF4RX20YY	Reactor 4.5 Hy. @ 2 Ma. DC, 1.2 Hy. @ 4 Ma. DC				2300			DI-T27
DI-T28	TF4RX20YY	Reactor 1.25 Hy. @ 2 Ma. DC, 5 Hy. @ 11 Ma. DC				100			DI-T28
DI-T29	TF4RX20YY	Reactor 9 Hy. @ 2 Ma. DC, 5 Hy. @ 6 Ma. DC				105			DI-T29
DI-T30	TF4RX20YY	Reactor 3 Hy. @ 4 Ma. DC, 15 Hy. @ 20 Ma. DC				25			DI-T30
DI-T31	TF4RX17YY	Single or PP output	120 CT 150 CT	10 10	3.2 4	4		500	
DI-T32	TF4RX17YY	Single or PP output	320 CT 400 CT	7 7	3.2 4	20		500	
DI-T33	TF4RX17YY	Single or PP output	640 CT 800 CT	5 5	3.2 4	43		500	
DI-T34	TF4RX17YY	Single or PP output	800 CT 1,000 CT	4 4	3.2 4	51		500	
DI-T35	TF4RX13YY	Single or PP output	1,060 CT 1,330 CT	3.5 3.5	3.2 4	71		500	
DI-T36	TF4RX13YY	Single or PP output	1,600 CT 2,000 CT	3 3	3.2 4	109		500	
DI-T37	TF4RX13YY	Single or PP output	8,000 CT 10,000 CT	1 1	3.2 4	505		500	
DI-T38	TF4RX13YY	Inol. or interstage	10,000 CT	1	10000 CT	950	970	500	DI-T38
DI-T39	Drawn Hermalloy shield and cover for DI-T's								DI-T39

†DCMA shown is for single ended usage (under 5% distortion—100MW—1KC) . . . for push pull, DCMA can be any balanced value taken by 5W transistors (under 5% distortion—500MW—1KC)
*DI-T units have been designed for transistor application only . . . not for vacuum tube service. Pats. Pend.

And Special Units to
Your Specifications

UNITED TRANSFORMER CORPORATION
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Incomparable Value!



Model SX-100
Amateur Net \$295.00

Approved for FCDA
matching funds
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SX-100
selectable
sideband
receiver
proved best
in its field
by far!

• In all our quarter-century of manufacturing, no Hallicrafters design has received more enthusiastic approval than the SX-100 receiver.

How have we measured this approval? *First*, by the letters we receive—more favorable comment than ever before. *Second*, by the conversation we hear on the air from owners and observers alike. *Third*, by sales—the SX-100 is one of the *fastest selling communications receivers we've ever designed*.

Never before has there been available a receiver with all these quality features at such a reasonable price. Better look into it yourself, today. Your jobber has the details.

1. Selectable side band operation.

2. "Tee-Notch" Filter—This new development provides a stable non-regenerative system for the rejection of unwanted heterodyne. The "Tee-Notch" also produces an effective steepening of the excellent 50 KC i.f. pass band (made famous in the SX-96) and further increases the effectiveness of the advanced exalted carrier type reception.

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4. Antenna trimmer.

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7. Full precision gear drive dial system.

8. Second conversion oscillator crystal controlled—greater stability through crystal control and additional temperature compensation of high frequency oscillator circuits.

9. Frequency range: 538-1580 kc. 1720 kc-34 mc.

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Pitch Control • Reception • Standby
Response control (upper/lower
side band selector)

Antenna Trimmer • Notch depth
Notch Frequency • Calibrator
on/off • Sensitivity • Volume
Band Selector • Tuning • AVC on/off
Noise limiter on/off
Bandspread • Selectivity.

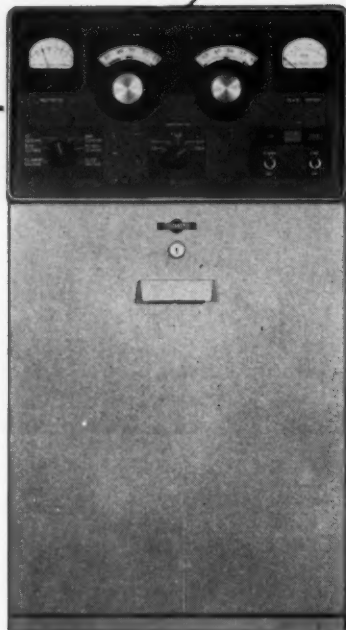


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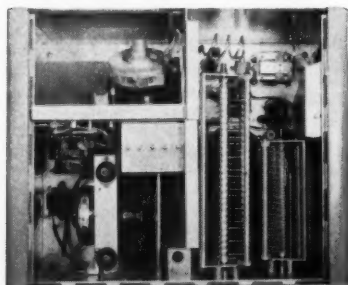
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**COLLINS 30S-1
LINEAR AMPLIFIER
GIVES YOU:**

**MAXIMUM POWER
AUTOMATIC LOAD CONTROL
LOW DISTORTION**



Simplified front panel controls and compact styling makes the 30S-1 a handsome package only 30 1/4" H, 17" W and 16 1/4" D.



The compact 30S-1 SSB and CW Linear Amplifier is a completely self-contained, single tube, grounded grid linear amplifier. Requiring 70 to 100 watts driving power, it provides the full legal power input for SSB (1 kw average) or 1 kw for CW.

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Front panel switching and simplified controls offer the amateur a bonus in ease of operation and optimum operating efficiency. On the 30S-1 correct tuning and loading are indicated by a zero reading on a full scale multimeter. The loading control is simply adjusted for zero meter reading, while the PA tuning control is operated in the usual manner to obtain minimum plate current.

The frequency coverage takes in all amateur bands between 3.5 and 30 mc. General coverage can be had by a simple internal adjustment. The tube used is the Eimac 4CX1000A. The power supply provides all operating voltages for the tube and control circuits, operating from a primary power of 115 v or 230 v ac, 50/60 cps, single phase, with 2000 watts max.

See your Collins distributor and examine the other S-Line units—the 75S-1 Receiver and 32S-1 Transmitter, which drives the 30S-1 Linear Amplifier. The Collins KWM-1 Transceiver can also be used to excite the 30S-1.



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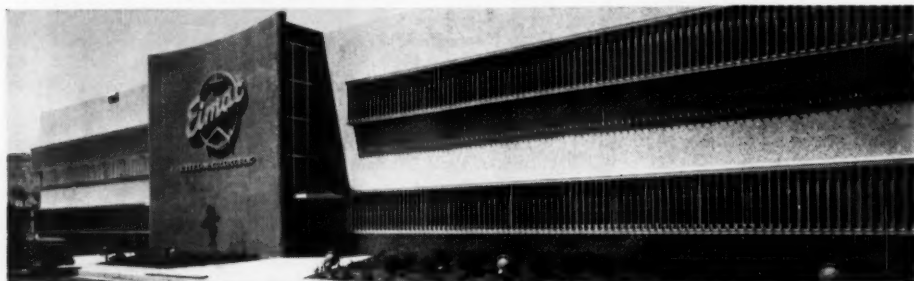
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EIMAC TUBES NOW IN PRODUCTION IN AMERICA'S NEWEST, MOST MODERN TUBE PLANT

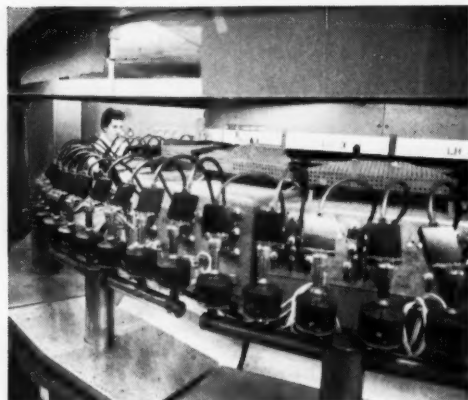
In San Carlos, California, Eimac's third and largest plant is nearing full production to meet the great demand for many popular Eimac electron tube families. Never before have so many advanced techniques and processes been applied to vacuum tube manufacture. Eimac's leadership in new processing methods has brought a new era of quality to electron tubes.



Ready for shipment, these Eimac ceramic tetrodes are just one of more than a hundred different tube types manufactured by Eitel-McCullough, Inc., including negative grid tubes, power amplifier klystrons, reflex klystrons and traveling wave tubes.



Eimac, San Carlos, joins San Bruno and Salt Lake City facilities as Eimac's newest plant.



Eimac designed rotary vacuum pumps speed production, achieve hard, clean tube vacuums. Pumping Eimac tubes at high voltages and ambient temperatures assures long life and reliability. These giant rotary pumps are typical of production equipment custom designed by Eimac for transmitting tube manufacture.



Every tube meets rigid Eimac specifications before shipment. On test consoles like this, dozens of electrical characteristics are patiently tested and recorded for each Eimac tube produced. Environmental testing equipment is also available for testing for severe applications.



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SAN CARLOS, CALIFORNIA

It pays to insist on **PR** crystals

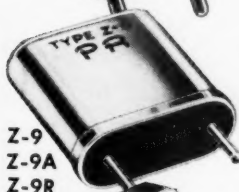
STANDARD OF EXCELLENCE SINCE 1934



Z-2



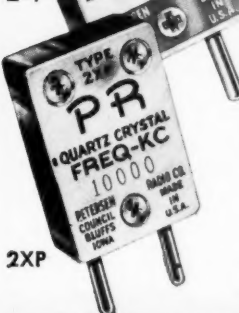
Z-3



Z-9
Z-9A
Z-9R



Z-1



2XP

AMATEUR TYPES

40, 80 and 160 Meters, PR Type Z-2

Rugged. Low drift, fundamental oscillators. High activity and power output. Stands up under maximum crystal currents. Stable, long-lasting, hermetically sealed; ± 500 cycles

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Third overtone oscillator. Low drift. High activity. Can be keyed in most circuits. Fine for doubling to 10 and 11 meters or "straight through" 20 meter operation; ± 500 cycles

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50 to 54 Mc., PR Type Z-9A

Fifth overtone; for operating directly in 6-meter band; hermetically sealed; calibrated 50 to 54 Mc.; ± 15 Kc.; .050" pins

\$6.95 Net

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Commercial Crystals available from 100 Kc. to 70 Mc. Prices on Request.

SPECIAL TYPES

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3023.5 Kc., .005% **\$3.45 Net**

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Official assigned frequencies in the range. Calibrated to .005%. 1600 to 10000 Kc. **\$3.45 Net**

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Suitable for converters, experimental, etc. Same holder dimensions as Type Z-2.

1600 to 12000 Kc., (Fund.)

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Official frequencies in Citizens' band (27 Mc. Range) and for Radio-Controlled objects. Calibrated to .005% **\$4.25 Net**

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For Lear, Narco and similar equipment operating in the 121 Mc. region, requiring crystals in 30 Mc. range.

Each **\$4.95 Net**

Type Z-6A, Frequency Standard

To determine band edge. To keep the VFO and receiver properly calibrated.

100 Kc. **\$6.95 Net**



Z-6A

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Anniversary
Year
1934-1959

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COUNCIL BLUFFS, IOWA

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Section Communications Managers of the ARRL Communications Department

Reports Invited. All amateurs, especially League members, are invited to report station activities on the first of each month (for preceding month) direct to the SCM, the administrative ARRL official elected by members in each Section. Radio club reports are also desired by SCMs for inclusion in QST. **ARRL Field Organization station appointments** are available in the areas shown to qualified League members holding Canadian or FCC amateur license, General or Conditional Class or above. Those include ORS, OES, OPS, OO and OBS. SCMs also desire applications for SEC, EC, RM and FAM where vacancies exist. OES appointment is available to Novices and Technicians.

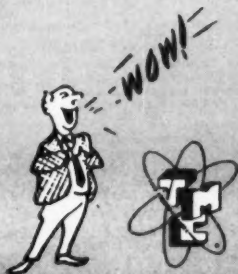
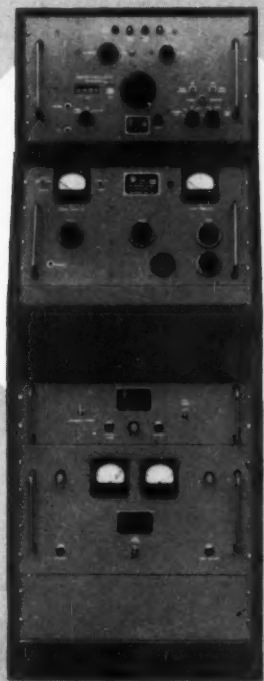
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Carri Zone	KZ5RV	Ralph E. Harvey	Box 15
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Saskatchewan			Rosett

*Official appointed to act temporarily in the absence of a regular official.

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It is an incorporated association without capital stock, chartered under the laws of Connecticut. Its affairs are governed by a Board of Directors, elected every two years by the general membership. The officers are elected or appointed by the Directors. The League is noncommercial and no one commercially engaged in the manufacture, sale or rental of radio apparatus is eligible to membership on its board.

"Of, by and for the amateur," it numbers within its ranks practically every worth-while amateur in the nation and has a history of glorious achievement as the standard-bearer in amateur affairs.

Inquiries regarding membership are solicited. A bona fide interest in amateur radio is the only essential qualification; ownership of a transmitting station and knowledge of the code are not prerequisite, although full voting membership is granted only to licensed amateurs.

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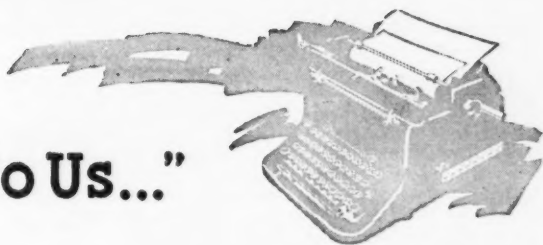
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"It Seems to Us..."



FIELD DAY

Eleven thousand three hundred and sixteen amateurs can skip this editorial and turn directly to their favorite department. These hams, participants in last year's Field Day, are fully aware of the fun, excitement, comradeship, operating pleasure and training of the Big Event and, we bet, already have their spot picked out for *this* year. By this time, they have lined up transmitters, tents, receivers, battery packs or putt-putts, Coleman stoves, masts, tables, chairs and portable ice-boxes. They know who has the mid-watch on 80, who's furnishing the two-meter beam and how many mikes are available. They've un-kinked the antenna wire, appointed the cooks, issued publicity releases and notified Grandma that she may expect a houseful of young'uns the week end of June 27-28. This year, by gum, they're out to beat the Podunk Hollow Radio Club, come wind, high water, or a worn-out ionosphere.

But the other one hundred and seventy-eight thousand of you, stick around, because we want to tell you what you've missed — and how you can get in on the fun.

Who can take part? Any amateur — Novice, Technician, Conditional, General, Advanced or Extra — may go out on Field Day, alone, with a friend or with a group. The whole family can go along. The older junior ops often make fine log-keepers, while the XYL finds that cooking over a portable stove, charcoal burner or fireplace is not especially tough.

Regular mobile gear can be used with the whip antenna, or the car can be parked in a pleasant spot and a long wire run to a near-by tree. The two-meter transmitter-receiver often does fine in the more-populated areas. A Novice transmitter, perhaps gathering dust since the General Class ticket arrived, may fill in nicely, or the junk box may have enough parts for a 29-watt battery-powered rig. If a gasoline-powered generator is at hand, the regular station can be moved out for the week-end, with a long-wire, dipole, or vertical antenna. Some field teams even use beams or rhombics, but a fancy set-up is not at all necessary.

Your Field Day headquarters can be a tent, park pavillion, station-wagon — or even the open air, if you can count on dry weather. Many

individuals and two-man teams go out for the full twenty-four hours, as do the larger groups, but quite a few limit their activity to a shorter period, perhaps combined with some fishing, swimming or picnicking. Even if you're stuck at home you can compete with other fixed stations in trying to work as many portables as possible.

As you look through the rules, printed in full on page 64, you'll notice that they favor the low-power station in the field. This is in keeping with the serious purpose behind the fun of Field Day: emergency preparation. The station away from home which can successfully slice through the FD QRM with 29 watts can also handle messages from a charred forest, a flood-created island or abreast of a tornado's wreckage.

No matter what type of operation you do . . . alone, with a partner, with your family or a large group . . . whether you use c.w. or phone . . . if the weather is cold, hot, wet or windy . . . this weekend is sure to be remembered as the amateur event of the year. Where else can you get the excitement of a contest, the fun of a picnic, the comradeship of a hamfest and the satisfaction of public service, all in one package?

CITIZENS BAND

The Citizens' Band isn't really our baby, but our correspondence shows that many hams are interested in — and some already have licenses for — the Class D band at 11 meters. In this connection, we feel a couple of items are worthy of mention.

First, an amateur license does not authorize you to make any adjustments or tests during or coincident with the installation, servicing or maintenance of Citizens' Band equipment which could result in improper operation; a second-class commercial ticket is required. It may seem a little odd that we can do anything which needs to be done on a 10-meter kilowatt and yet have to leave the 11-meter five-watts alone, but that's how the rules read! It is true that crystal-controlled rigs do not have to be type-approved, but they should be checked out under the supervision of a commercial op before being put into service.

Second, though the rules do not now specifically prevent licensed Citizens stations

(Continued on next page)

(Continued from page 9)

from calling CQ on 11, FCC had no intention of providing for amateur-type operation on the band. The rules specify "short distance radio communications." Also, the regs require that all communications be as brief as possible; the license itself points out that the band is a mammoth party line and licensees must respect the rights of others who want to use the 22 common channels. If licensees continue trying to work all states and carry on ragchews on the band, it is likely that FCC will tighten up the regs, to the detriment of all who want to use 26.96-27.23 Mc. under the present flexible rules. One further caution: Citizens stations may work only each other; contact with amateurs, here or overseas, is not permitted.

OUR COVER

Our cover this month is a gentle reminder of the coming Field Day, and it shows part of the set-up at California's Aerojet Radio Club (K6CLZ). Check back on the report of last year's Field Day by reading the story on page 46 of December QST, read the rules in this issue on page 64, and then get ready!



(See page 47)

COMING A.R.R.L. CONVENTIONS

June 19-21 — ARRL National Convention, Galveston, Texas
July 4-5 — Pacific Division, San Jose, Calif.
July 24-26 — Southwestern Division, Pasadena, California
August 15-16 — Pacific Div., Honolulu
August 22-23 — Central-Midwest Divisions, St. Louis, Mo.
September 5-7 — Maritime Provinces Convention, Halifax.
September 5-6 — N.E. Division, Hartford
October 3-4 — Roanoke Division, Richmond, Va.



Helpful ham Edward Trombley, W8CAM, of Saginaw, Mich., (left) received the 1958 Cosmo Calkins Memorial Award at the Grand Rapids ARRL convention. Curran L. Skutt, WBFSZ, presented the award. Trombley, who spends hours helping new amateurs, holds daily code practice on 160 meters. Last year, he was net control for 100 straight days for the Upper Michigan Weather Net.

ARRL PACIFIC DIVISION CONVENTION

San Jose, Calif. — July 3-5

The Associated Radio Clubs of Greater San Jose proudly extends an invitation to all amateurs to attend the Pacific Division Convention at San Jose, California on July 3, 4 and 5. Activities will include something of interest to everyone and technical talks by leading amateurs in all phases of amateur radio will be presented. The major speaker will be Goodwin L. Dosland, WØTSN, president of ARRL.

Convention headquarters will be the Hotel St. Claire and reservations can be made through the convention committee. The large number of motels in the San Jose area also offer facilities for amateurs who like to attend conventions in the "western" style. A special ladies program will be held on Saturday July 4. Various group breakfasts will be held Sunday morning July 5, including mobile groups, various traffic nets, s.s.b. groups, and v.h.f. minded amateurs. Main feature of the convention will be a steak barbecue, complete with all the trimmings, also on Sunday. Transmitter hunts will be held to test the skill of "radio snoopers."

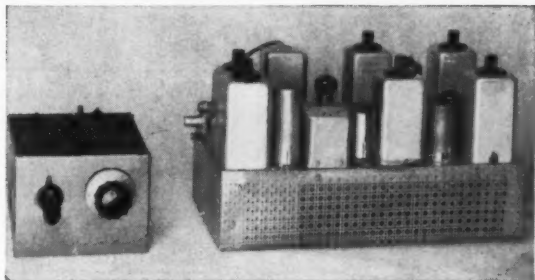
Ticket cost of \$7.50 will include admission to all convention sessions, ROWH initiation, Saturday evening dance, and entertainment, and the Sunday barbecue. Deadline for pre-registration is June 20 and reservations should be sent to Associated Radio Clubs for Greater San Jose, P. O. Box 6, San Jose, California.

Come to San Jose for wonderful "ham" time.



Mobile S.S.B. Transceiver

The variable-frequency crystal oscillator (VXO) is at the left. The s.s.b. exciter chassis at the right contains all circuits except the audio amplifier used in receiving. Most of the tuned circuits are housed in shield cans taken from an ARC-5 receiver.



High-Frequency Surplus-Crystal Filter in a 21-Mc. Car Station

BY BENJAMIN H. VESTER,* W3TLN

Here is a mobile s.s.b. station with common frequency control for transmitting and receiving, using an 8550-kc. crystal filter for sideband separation. The filter uses FT-243 surplus crystals as described by the same author in January QST. Liberal use of components from ARC-5 equipment keeps the cost within practically everyone's range.

This article covers the exciter and receiver. The final amplifier and power supply are conventional in design, so have not been included in the description.

ONE doesn't have to listen much to the s.s.b. portions of the bands these days to spot the popularity of two very nice-sounding rigs, the HT-32 and the KWM-1. Since I had been planning to build an s.s.b. rig for the car for some time, I decided to combine some of the features of both into a mobile transceiver. W3HEC, a local buddy, had been toying with the idea also, so we argued a number of ideas back and forth and each came up with a transceiver design. Dan's design is somewhat more sophisticated (at the expense of a few more tubes) and covers two bands. I settled on one-band operation with the rig being built so I have the option of using plug-in coils for other bands if desired later on. VOX was omitted since I planned to use a hand-held mike anyway.

The advantages of using a high-frequency i.f. for a single-conversion receiver have been adequately pointed out by Goodman:¹ some-

what less has been said about single-conversion transmitters. The same advantages accrue, however; fewer "birdies," better linearity, and simpler circuitry, among others. Having been fortunate enough to find out how to make pretty decent high-frequency crystal filters from the surplus FT-243 crystals,² I found it possible to make almost the entire transceiver from parts in the junk box with essentially no cash outlay. The 15-meter band was chosen as the ideal mobile s.s.b. band to start on, since it hasn't yet been overrun with kilowatts. Also, the level of activity is good during the day and evenings.

It might be well to look over the block diagram of the unit before going into the circuit details. Fig. 1 on the next page shows the layout. On receive, the cascode 6BK7 feeds a 6BA7 mixer, the 21-Mc. signal being heterodyned down in this mixer to pass through the crystal filter at 8.55 Mc. The gain up to this point is kept low so there will be a minimum of cross-modulation from stations outside the filter passband. The filter is followed by two low-gain i.f. stages which feed into a product detector. The carrier reinsertion for this stage comes from the same oscillator that will later be used for generating our s.s.b. transmitter signal. This is really a very conventional single-conversion receiver; the main care taken is to keep the signal levels down, up to the final detector.

On transmit, a relay contact switches B+ off the tubes which are used for receive only and applies B+ to the transmit-only tubes. Since we have a fair amount of gain at the 8.55-Mc. i.f. frequency, we can generate the s.s.b. signal at a very low level. A 4-diode ring modulator is used, the level at the modulator being low enough so that it can be fed directly with a carbon mike. The unwanted sideband is eliminated by

* 601 Wallerson Road, Baltimore 28, Md.

¹ Goodman, "What's Wrong With Our Present Receivers?", QST, Jan., 1957.

² Vester, "Surplus-Crystal High-Frequency Filters," QST, Jan., 1959.

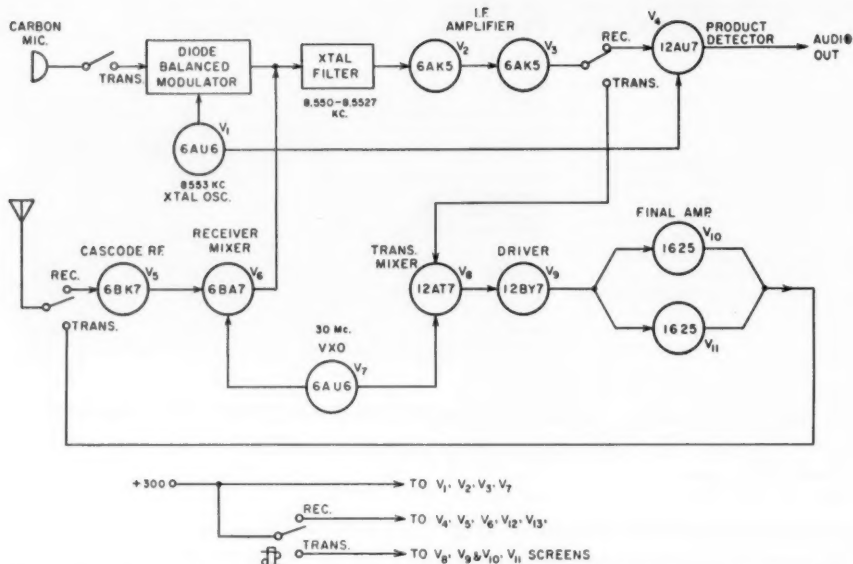


Fig. 1—Block diagram of the transceiver. The final amplifier (1625) is not included in the accompanying description, nor are details of send-receive switching discussed.

the crystal filter, and the same two i.f. stages are used to get the signal up to a level sufficient to drive the transmit mixer. This is a cathode-coupled 12AT7 mixer, the heterodyne signal being provided from the same v.f.o. which was used for the receiver mixer. This, quite obviously, gives us an output signal which is exactly on the same frequency as that on which we were receiving. The 12BY7 driver amplifies the signal up to a level sufficient to drive the final tubes.

The only really serious design problem posed by this block diagram is the v.f.o. Those of you who have tried to build a v.f.o. stable enough for home-type s.s.b. undoubtedly can appreciate the problem of building one that will stay put in a bouncing car with the battery voltage roaming up and down. Fortunately, W3BWK has come up with a technique which solves this problem.³ We happened to have a 30-Mc. harmonic-cut crystal (10-Mc. fundamental frequency) in the junk box which allowed itself to be pulled in frequency (using W3BWK's VXO circuit) just enough to cover the upper 50-60 kc. of 15 meters.

A few quick calculations will show you that all but one of the spurious images and harmonics lie far away from the 15-meter band, which is quite fortuitous since the choice of frequencies was based on the contents of my junkbox. The exception is that the VXO circuit does have a small amount of second harmonic (i.e., 20 Mc.) present. A 30-Mc. double-tuned circuit was used between the VXO and the mixers it feeds, this adequately suppressing the 20-Mc. signal. The

VXO was also placed in a separate box, which further enhanced suppression of the 20-Mc. signal. Most of the other interstage coupling circuits were made single-tuned for simplicity. This is one of the advantages of single conversion with a high-frequency i.f.—the double-tuned selectivity just is not required.

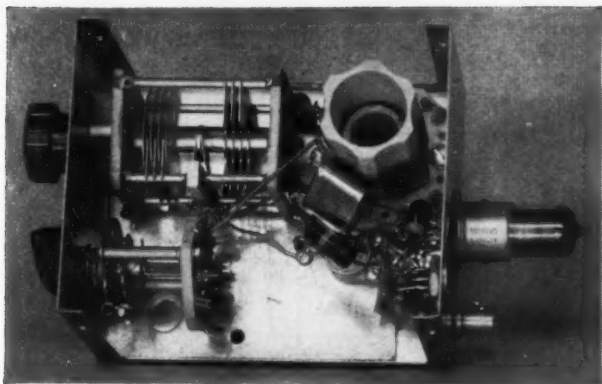
Circuit Details

A schematic of the main unit is shown in Fig. 2. The 8553-kc. carrier crystal oscillator is a conventional Pierce circuit. Capacitor C_x is used only if necessary. It will pull the frequency of the oscillator down and can be used to place the carrier at just the correct spot on the skirts of the sideband filter. I was lucky enough to etch my crystal to just the right frequency and was able to omit C_x . The crystal oscillator coil, tuning capacitor, and the crystal were all stuffed into a Command-Set i.f. can to prevent any radiation of carrier around the modulator.

The balanced modulator is a modification of a circuit recommended by Collins Radio for use with their filters. There are quite a few balanced modulator circuits around and if you would prefer to use two diodes instead of four, you can use one of the circuits in the ARRL *Handbook*. The balanced modulator parts were also stuffed into a Command-Set i.f. can, further to contain the carrier leak-through. The 180- μ f. mica button capacitors in the Command-Set cans were used throughout the rig as coupling capacitors. Any value in the neighborhood of 200-250 μ f. will be satisfactory.

A resistive isolating pad is placed between the balanced modulator and the crystal filter to

³ Shall, "VXO—A Variable Crystal Oscillator," *QST*, Jan., 1958.



Inside the VXO unit. L_0 is the coil on the ceramic form. L_{10} is in the lower right corner near the tube socket, and C_{10} is on the chassis beneath the resistor and crystal.

terminate the filter input properly and to isolate the filter from the nonlinear impedances of the balanced modulator. The crystal filter itself consists of a pair of back-to-back half-lattice circuits, a terminating resistor of 510 ohms having been experimentally determined to give the flattest passband (only $\approx 1/2$ db. ripple with the crystals I had). The article referenced in Footnote 2 gives all the details on how to construct this filter.

The 6AK5 i.f. stages are conventional, their tank circuits being made from Miniductor stock and mounted in Command-Set i.f. cans for shielding. The first 6AK5 has such a low grid-circuit impedance that it doesn't require neutralizing. However, the second one is neutralized using the capacitive bridge technique. We happened to have a piston-type glass capacitor to neutralize this with; a twisted-pair "gimmick" would work just as well. The second i.f. amplifier also has its gain cut by R_1 to a level which will just drive the final to saturation on voice peaks. You may prefer to make R_1 a potentiometer.

The output of the second i.f. amplifier has to be switched from one tube to another, and still have its tank circuit remain resonant. Shielded leads are used to the relay, K_1 , and the lengths of these leads are trimmed until resonance is obtained for both positions of the relay. It is important that this relay be placed as close to the circuit as possible and the shielded lead lengths kept down to a few inches.

A 12AT7 cathode-coupled circuit was used for the transmit mixer since it can handle relatively large signals with good linearity. A 6BA7 mixer was tried here but I couldn't get enough output from it with the available signal levels. The hot terminal of the grid coil, L_{13} , for V_{SA} should be arranged to be as close to where it feeds the 12AT7 as possible. I didn't have enough chassis space to put this coil in a separate i.f. can; however, it would undoubtedly enhance the over-all stability of the unit to do this.

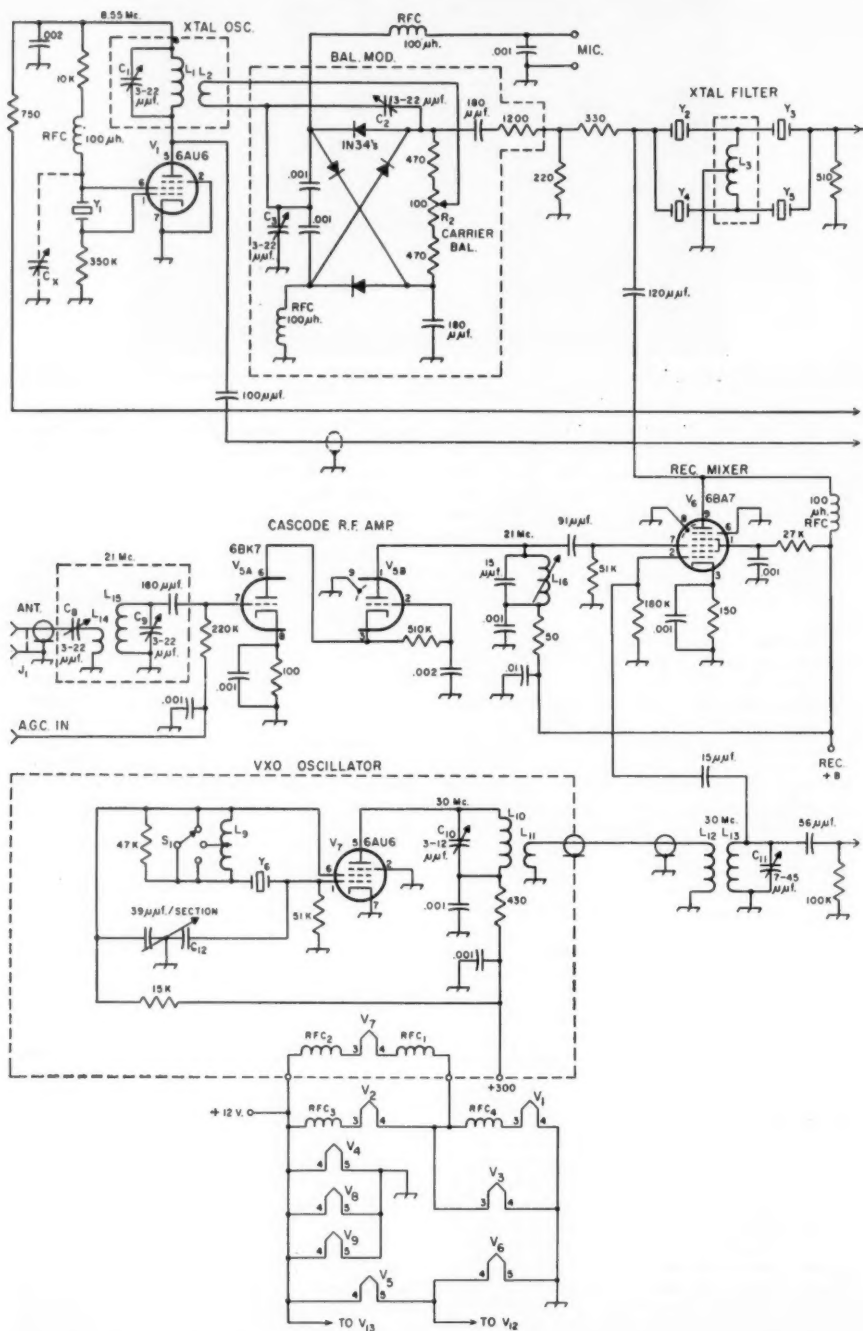
The 12BY7 driver stage is run Class A. This is a very hot tube in Class A and special care

must be taken to neutralize it properly. I used a twisted pair gimmick for the neutralizing capacitor here. The final tubes are run Class AB₁ to avoid the drive difficulties which occur with AB₂ operation. They are also neutralized for maximum stability.

I have always liked to place the final amplifier tubes in a separate box in my mobile rigs, so they can be mounted right at the base of the whip (front-fender mounted). There is probably no real efficiency advantage to this arrangement, but putting the final in a separate shielded box does greatly enhance the over-all stability—believe me, a little regeneration in an s.s.b. rig can really wreck you. In any case, the final should be completely shielded from the low-power stages. (One additional advantage of breaking the unit into several boxes is that it will fit into odd spots behind your automobile dashboard much more nicely.)

The variable oscillator that supplies both transmit and receive functions is a copy of Shall's original VXO circuit³ with only slight modifications. By tapping the coil which goes in series with the crystal you can tune different portions of the band and get a very slow tuning rate without any vernier tuning dials. My only purpose in using the tapped coil was to "make do" with the parts available in the junk box—if you buy a VXO-cut crystal per W3BWK's³ advice, you can undoubtedly cover the entire band without requiring switching. Since the VXO is the only portion of the rig which must be accessible in regular operation, it is mounted in a separate Minibox which is presentable enough looking to pass the XYL's inspection.

The receiver front end uses a cascode r.f. stage. The only thing unique about this is the fact that it is the only stage in the receiver to which gain control is applied. A stage like this has a fairly large range of gain control that appears adequate to handle all the signals I have heard so far. Of course, there is some sacrifice in noise figure when the gain control is cut in for louder signals—but who cares about noise figure when the signal is



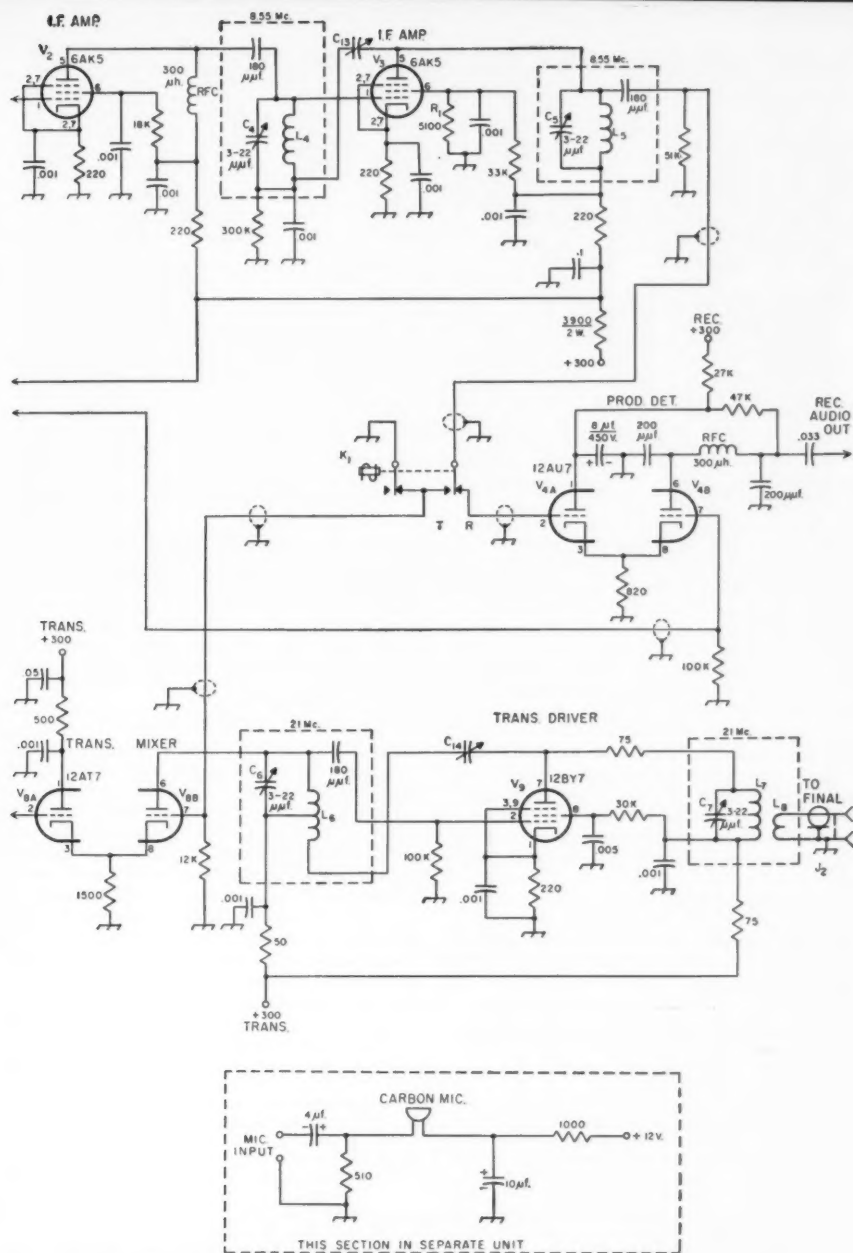
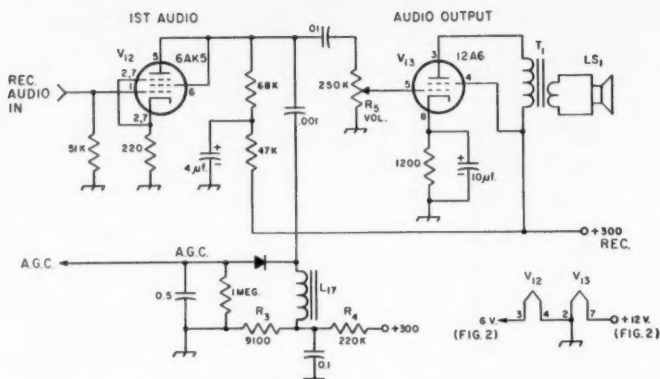


Fig. 2—Circuit diagram of components on main chassis. Unless otherwise indicated, capacitances are in μf , resistances are in ohms, resistors are $\frac{1}{2}$ watt. Capacitors with polarities marked are electrolytic; values up to and including 0.001 μf are ceramic or mica as convenient, values above 0.001 μf are paper. Plate-supply connections indicated by "Trans" and "Rec" are switched as shown in Fig. 1.

Turn page for list of components

Fig. 3—Audio and a.g.c. circuits. Capacitances are in μf , resistances are in ohms, resistors are $\frac{1}{2}$ watt. Capacitors with polarity indicated are electrolytic; others may be paper or ceramic as convenient.



L₁₇—App. 3 henrys (Command-Set choke) or high-impedance winding of small audio transformer.
LS₁—P.M. speaker
R₂, R₁—See text.

R₃—0.25-megohm control.
T₁—Universal output transformer, pentode plate to voice coil.
Diode in a.g.c. rectifier should be high back resistance type.

loud? The alternative to this is to apply a.g.c. to the i.f. stages too; this complicates the transmit-receive switching, however, since the gain required for transmit will be different from the receive gain.

The audio portion of the rig was put in a separate box since I intend to replace it some time in the future with a transistor amplifier. The schematic used is shown in Fig. 3. This is a standard audio amplifier and was built around tubes I had in the junk box. Automatic gain-control voltage is developed from the audio output of the first amplifier tube. The circuit used gives good "fast-make slow-recovery" a.g.c. action. Resistors R₃ and R₄ were chosen to give a delayed a.g.c. action so that there is no a.g.c. voltage developed on noise alone and on weak signals.

The circuits for the final amplifier and the transistor power supply used to power the rig are just like the ones which have appeared in *QST* and the *Handbook*, so we won't clutter up the pages here on them.

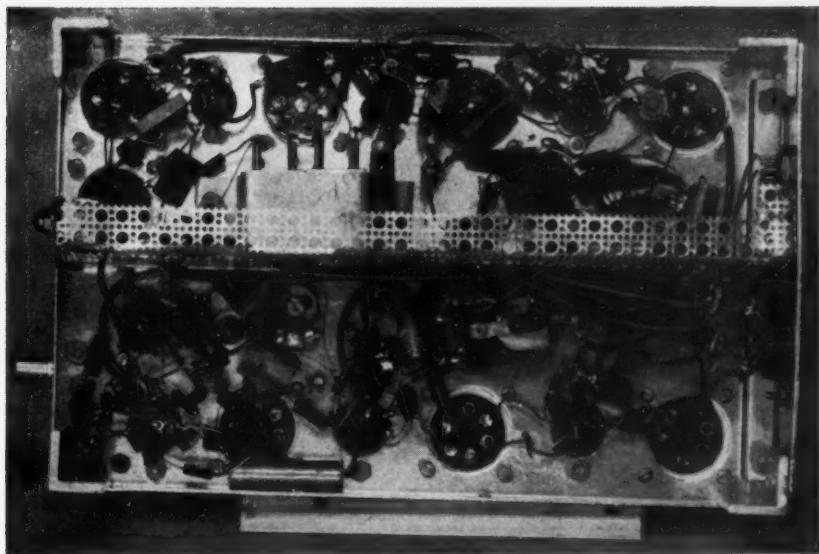
The constructional features of the unit can be seen from the illustrations. The main unit was built on two long narrow chassis (Seczak chassis stock, 3 by 10 inches) which were then bolted together. This allows good shielding and isolation with a minimum of effort. Shielded wire was used for all connections except the short r.f. leads between stages.

Alignment

There is very little alignment difficulty. The first step is to open the filament or B+ leads to the stages which must be neutralized (V₃, V₉, V₁₀, V₁₁). Then apply power to the remaining stages. The station receiver S meter can be used for essentially all of the alignment. Couple the receiver lightly to the coax output of the final (or the 12BY7) and tune in the VXO frequency; C₁₆ and C₁₁ are then peaked for a maximum reading. Now switch down to 15 meters and tune in the carrier. You can set R₂ to one end of its range to assure that some carrier will come through.

C₁—C₉, inc.—3-22- μf . trimmers from ARC-5 i.f. transformers.
C₁₀—3-12- μf . ceramic trimmer.
C₁₁—7-45- μf . ceramic trimmer.
C₁₂—35- μf . per-section variable.
C₁₃, C₁₄—Neutralizing capacitor; see text.
C₁₅—3-12 μf . ceramic trimmer (see text).
J₁, J₂—Coaxial connectors, chassis mounting.
K₁—D.p.d.t. relay, 12-volt coil (operated by send-receive switch).
L₁—25 turns No. 34 on $\frac{3}{8}$ -inch diam. form (ARC-5 i.f. transformer form). Adjust to resonate at 8550 kc. with C₁ and the shielded lead to V₁₂.
L₂—8 turns wound on same form as L₁.
L₃—Bifilar winding on toroidal ferrite core, total inductance 50 μh . (See footnote 2).
L₄—40 turns No. 24, $\frac{1}{2}$ -inch diam., 32 t.p.i. (Miniductor 3004).
L₅—35 turns same as L₄.
L₆—22 turns same as L₄, tapped 8 turns from bottom.
L₇—18 turns same as L₄.
L₈—3 turns same as L₄, spaced 2 turns from L₇.

L₉—27 turns No. 28 enam. on $\frac{1}{8}$ -inch diam. form, 24 t.p.i. (BC-458 oscillator coil form). Tapped at 13th turn. Coil should be adjusted to function with crystal used in VXO.
L₁₀—13 turns same as L₁.
L₁₁—7 turns same as L₁, spaced 3 turns from ground end of L₁₀.
L₁₂—7 turns same as L₁.
L₁₃—11 turns same as L₁, spaced 3 turns from ground end of L₁₂.
L₁₄—19 turns same as L₁.
L₁₅—19 turns same as L₁, spaced 3 turns from L₁₄.
L₁₆—16 turns No. 34 on $\frac{3}{8}$ -inch diam. slug-tuned form (CTC LS-9).
R₁—See text.
R₂—100-ohm control.
RFC₁—RFC₂, inc.—No. 30 enam. close-wound full length on 2-watt resistor.
Y₁—8553-kc. crystal.
Y₂, Y₃—8550-kc. crystal.
Y₄, Y₅—8551.5-kc. crystal.
Y₆—30-Mc. crystal (for VXO).



The various tubes and shield cans in this view can be identified by reference to Fig. 4, V_1 being at the upper left. The filter crystals, confined by the aluminum strip just above left center, are soldered directly into the circuit. V_1 is not visible in this photograph since it is mounted inside the can (upper left corner) containing C_1 , L_1 and L_2 . The Miniductor coil at left center in the lower section is $L_{12}L_{13}$. The send-receive relay, K_1 , is to the right of center in this same section, just below the perforated dividing partition. Components are wired in for short leads. Power and microphone connections are through the octal socket on the right-hand wall.

Peak the i.f. transformers and all the other transmitter tuned circuits (C_1 , C_4 through C_7) for a maximum reading. To neutralize V_3 , adjust its neutralizing capacitor to give a minimum S-meter reading. After it is neutralized, voltage should be applied to V_3 to bring the carrier back up to a usable level. The neutralizing in the 12BY7 and the final is done similarly. Now that all the stages are operating properly, alternately adjust R_2 , C_2 and C_3 to null the carrier signal out. This completes the alignment of the transmitter.

The receiver front-end alignment can be done by the usual "tune for maximum signal" technique.

To get the 8553-ke. crystal oscillator on the proper frequency, leave the unit in the receive

condition, but connect the microphone. You will now be able to hear in the receiver just what your transmitted signal will sound like on the other end. Adjust C_X until your voice sounds most natural. The frequency will probably be about 200-500 cycles above the edge of the filter pass-band.

Modifications

As was pointed out earlier, the choice of the VXO and filter frequencies was based on the contents of my junk box. Several of us who have built the FT-243 filters have found little difference in results from 5 Mc. up to 8.5 Mc., so you can choose frequencies which fit the VXO crystal

(Continued on page 164)

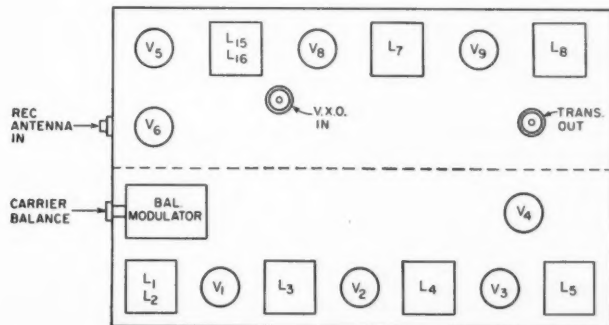
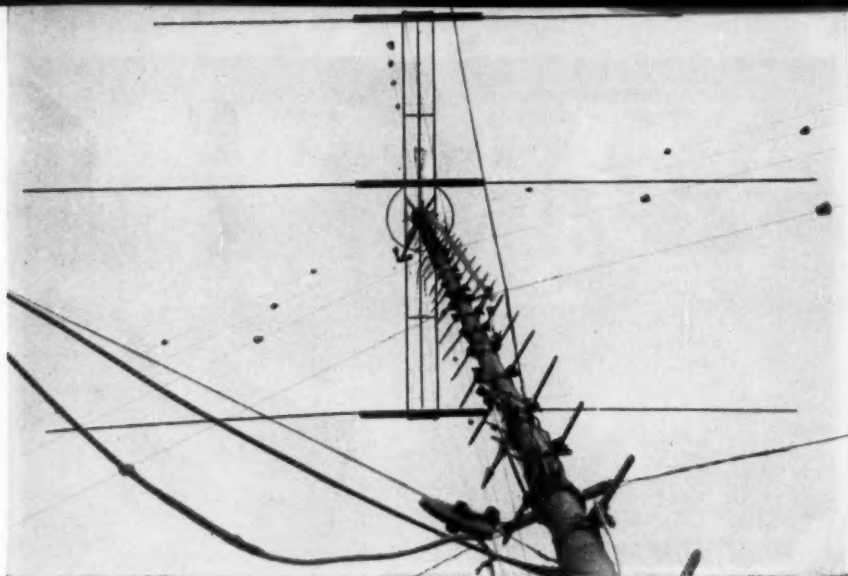


Fig. 4—Layout diagram of the top of the exciter chassis. The lower edge in this drawing is the front as seen in the front view of the unit.



Looking up the pole to the three-band "automatic" beam at ON4BX.

Feeder Matching System for the G4ZU Beam

Coaxial Feed Without the Matching Network

BY ARTHUR BLAVE,* ON4BX

By choosing the proper length for the open-wire section of feeder, it is possible to dispense with the matching network used in the G4ZU antenna system for going into coaxial line.

THE G4ZU antenna, described first in the February, 1956 issue of the *RSGB Bulletin* under the designer's signature, has been used successfully by numerous DX men. It is a 3-element rotary covering 3 bands, 14, 21 and 28 Mc., and its operating principles are reviewed briefly below.

Director

The director is cut for 28 Mc. To allow it to work on 21 Mc., a loading coil, L_1 , is inserted in the center, as shown in Fig. 1. To cancel the effect of L_1 on 28 Mc., a stub having a length of $\frac{1}{4}$ wavelength on 28 Mc. is connected parallel with the coil. The other end of this stub being open, at 28 Mc. the coil L_1 is practically short-circuited by the stub's low impedance. The value

of L_1 must be such that the stub and coil together result in a net inductance which tunes the director to 21 Mc. On 14 Mc. the director is disregarded.

Reflector

Similar reasoning is applied to the reflector on 14 and 21 Mc. It is cut for 21 Mc. A center-loading coil, L_2 , tunes it to 14 Mc. This coil is short-circuited on 21 Mc. by a stub $\frac{1}{4}$ wavelength long at that frequency. On 28 Mc. there is no special tuning, but the performance of the element is similar to that of collinear half-wave reflectors situated far from the therefore relatively broad-band driven element.

Driven Element

The driven element has neither loading coil nor stub, and it is driven through an open-wire transmission line operating with standing waves on the three bands. This line, which is connected to a series-tuned coupling circuit, has a length such that on 21 Mc. the impedance seen at its input terminals is resistive. Consequently, if the series circuit is tuned to 21 Mc. power will be coupled into the line. G4ZU found that under this condition the impedance of the feeder on

* 150 Rue du Marais, Houdeng-Aimeries (Ht), Belgium.

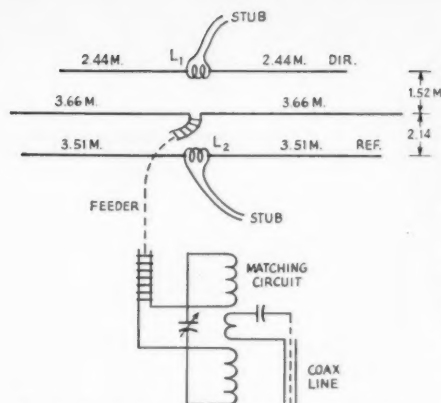


Fig. 1—The basic arrangement of the G4ZU antenna. Open-wire line is used from the driven element to the matching circuit.

14 Mc. is inductive and thus compensates for the capacitive reactance of the series circuit on that frequency. On 28 Mc. the opposite effect occurs and the capacitive input impedance of the feeder compensates for the inductive reactance of the series circuit.

Consequently, it is sufficient to couple a link of a few turns to the coil of the series circuit and to connect the link to a coaxial cable. The cable may be of any length since it will operate with a low standing-wave ratio. G4ZU has recommended a feeder length of about 39 feet for optimum operation.

A beam of this type was built and installed at ON4BX in December, 1956. It is mounted on a 55-foot mast, so the series circuit "matching box" is located about 16 feet from the ground. A coaxial cable about 160 feet long connects it to the transmitter. The directive patterns shown in Fig. 2 were measured at rather short range, which perhaps explains the absence of a null on 14 Mc. A complete description of the antenna was given in the February, 1957 number of the bulletin *QSO-CQ* of the Belgian Amateur Union.

Modifications

However, measurement of the s.w.r. on the coaxial cable showed that the set-up was not perfect and that it should be possible to improve it. Exact compensation of the feeder input impedances by the series circuit requires taking into account the L/C ratio of the circuit and the length of the tuned feeder, as well as the coefficient of coupling and the number of turns on the coil connected to the coaxial cable. In my case, it was rather difficult to make adjustments of the matching circuit with the box 16 feet above the ground. The installation of a relay for selecting a variable capacitor for each band is one easy solution which showed itself experimentally to be effective for improving the s.w.r. However, after it had worked for a few months I preferred to give it up and to look experimentally for a means of totally eliminating the matching box.

It should be possible to find a feeder length such that the impedance at the input terminals would be resistive on the three bands. A series of impedance measurements was made over 10 to 30 Mc. on feeders of different lengths. These measurements were carried out on the G4ZU beam which ON4NO had built in the meantime, because its feeders were easier to reach than on my 55-foot pole. I thank him here for having "loaned" his beam for the measurements. Moreover, the results may be applied to any G4ZU whatever.

The feeders and the two halves of the driven element are considered as a transmission line open at the two ends. The length of this line is equal to the electrical length of the feeder increased by the electrical length of half the driven element.

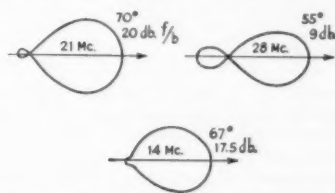


Fig. 2—Sketch of directive patterns measured by ON4BX on the original version of the antenna.

The measuring equipment consisted of an h.f. General Radio type 1606-A bridge, an h.f. General Radio type 1001-A generator, and a Super-Pro communications receiver as a null indicator. The corrections necessary because of the effect of the bridge connections have been calculated. The accuracy of the measurements was checked by measuring the resonant frequencies of a feeder having an electrical length of 21.6 meters (3.66 meters for the driven element plus a 17.94-meter feeder). This length is not resonant in the amateur bands and served only for a verification of the equipment. The following relation must be satisfied:

$$\text{Electrical length} = (2n + 1) \frac{\lambda}{4}$$

$$(n = 0, 1, 2, 3, \text{etc.})$$

since we are looking for the current loops. The resonances found were 11.0, 17.5, 23.2, and 29.8 Mc., as shown in Table I. The deviations cor-

Table I

Freq. in Mc.	n	Electrical Length	Difference in Meters	Difference in Per Cent
11.0	1	$\frac{3\lambda}{4} = 20.45 \text{ m.}$	- 1.15	- 5.3
17.5	2	$\frac{5\lambda}{4} = 21.42$	- 0.18	- 0.8
23.2	3	$\frac{7\lambda}{4} = 22.62$	+ 1.02	+ 4.8
29.8	4	$\frac{9\lambda}{4} = 22.65$	+ 1.05	+ 4.85

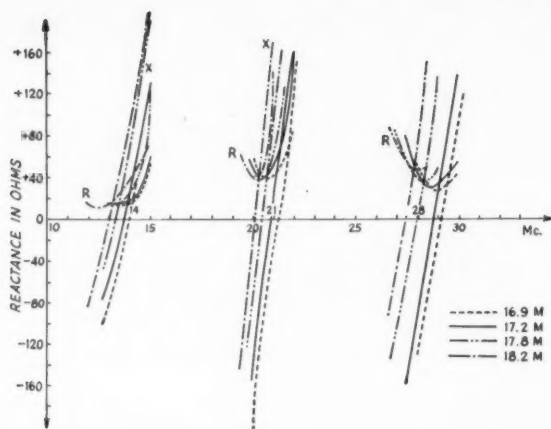


Fig. 3—Results of impedance measurements on four different lengths of open-wire lines.

respond to the maximum error of the equipment.¹

A set of feeder calculations for 14, 21, and 28 Mc. was next made, as shown in Table II. It can be seen that with a length of about 17 meters (approximately 56 feet) it is possible to find a compromise such that the impedance will be essentially resistive on the three bands. We made systematic measurements of impedances of several feeders of lengths varying from 18.44 to 16.9 meters. The results in four cases are shown in Fig. 3.

The length of 16.9 meters (55 feet 6 inches) evidently effects the compromise looked for. Since this length includes half the length of the driven element, the feeder itself must measure 16.9–3.66 or 13.24 meters in electrical length. There remains the problem of matching the feeder to the coaxial line. In my case, I simply connected the coaxial directly to the feeder without using a balun. I know that purists will not think well of this procedure, but as a matter of fact no irregularities in the directive patterns have been observed and they have the proper symmetry. It is probable that the effect of this unbalanced connection is minimized because of the length of the open-wire feeder and that it is nonexistent in the proximity of the driven element.

Fig. 4 shows the impedance measured at the input terminals of the 16.9-meter (including antenna length) feeder.

It is possible to find a compromise characteristic impedance such that the s.w.r. will stay within acceptable limits on the three bands, except perhaps at the low end of the 28-Mc. band. It simply remains to choose a combination of coaxial cables in multiple that will bring about the impedance compromise at a minimum cost. Two 50-ohm cables in parallel offer a good compromise. Fig. 5 shows the s.w.r. which one must expect with lines of various values of characteristic impedance.

¹ End effects and the effect of insulators on propagation velocity, which destroy the exact harmonic relationship of natural frequencies of lines, also contribute to the discrepancies. The author evidently has included these in the overall error. — Ed.

Table II

n	F = λ =	14 21.43	14.3 20.98	21 14.28	21.3 14.08	28 10.72	30 Mc. 10 Meters
0	$\frac{\lambda}{4}$	5.36	5.25	3.57	3.52	2.68	2.5
1	$\frac{3\lambda}{4}$	16.07	15.7	10.71	10.56	8.04	7.5
2	$\frac{5\lambda}{4}$	26.8	26.2	17.85	17.6	13.4	12.5
3	$\frac{7\lambda}{4}$	37.5	36.7	25.0	24.6	18.8	17.5
4	$\frac{9\lambda}{4}$	48.2	47.2	32.1	31.7	24.1	22.5
5	$\frac{11\lambda}{4}$	58.9	57.7	39.3	38.7	29.5	27.5
6	$\frac{13\lambda}{4}$	69.7	68.2	46.4	45.8	34.8	32.5
7	$\frac{15\lambda}{4}$	80.4	78.7	53.6	52.8	40.2	37.5
8	$\frac{17\lambda}{4}$			60.7	59.8	45.6	42.5
9	$\frac{19\lambda}{4}$			67.8	66.9	50.9	47.5
10	$\frac{21\lambda}{4}$			75.0	73.9	56.3	52.5
11	$\frac{23\lambda}{4}$			82.1	81.0	61.6	57.5
12	$\frac{25\lambda}{4}$					67.0	62.5
13	$\frac{27\lambda}{4}$					72.5	67.5

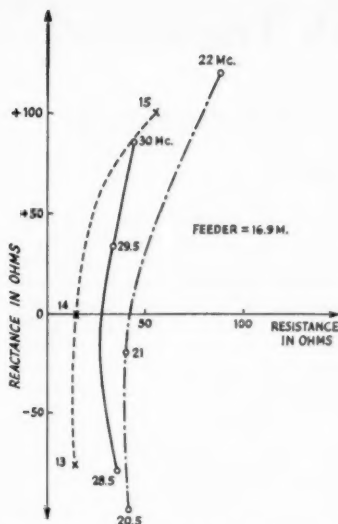


Fig. 4—Measurements on a 16.9-meter (electrical, including driven element) feeder length. These data were used in calculating the standing-wave ratios shown in Fig. 5.

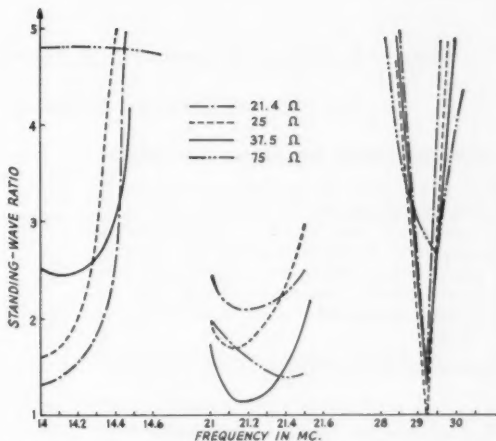


Fig. 5—Standing-wave ratios to be expected with coaxial lines of various values of characteristic impedance. The 37.5-ohm line consists of two 75-ohm cables in parallel; the 25-ohm line is two 50-ohm cables in parallel, and the 21.4-ohm line is two 75-ohm and one 50-ohm in parallel.

It is certain that the choice of the characteristic impedance of the line is important only if its length is relatively great. Let us note that in any case the use of the coaxial cable is necessary only if the distance requires it, and that a direct connection between the open feeder and a pi-network tank can be used successfully. The feeder also can be connected directly to the output link of a parallel-tuned plate tank.

All these possible variants using the feeder electrical length of 13.24 meters (approximately 43 feet) are featured by a low-impedance load, almost resistive, on the p.a. circuit.

This version of the G4ZU beam has been used at ON1BX for several months without using the matching box. In less than 15 months it has permitted me to increase the number of countries worked for the phone DXCC from 85 to 182.

Its advantage is the ease of installing the feeders and the total absence of all tuned circuits from the antenna to the transmitter. The experimental results agree with the semi-theoretical determinations, and the deviations remain within the total maximum error which, taking everything into consideration, is probably of the order of 15 per cent.

QST

Strays

The Denver Radio Club, Inc., has recently brought out a directory of Colorado hams, with three principal sections. The first is a master list of the 1700 hams in the state, alphabetically by call, and including addresses and telephone numbers. The second section shows amateurs in the Denver metropolitan area, alphabetically by name. The third lists amateurs outside Denver, alphabetically by name, and with a town number code making it easy to locate hams in a particular city. The *Colorado Ham Directory*, 66 pages with paper covers, can be obtained for \$1 from the Denver Radio Club, Inc., Box 356, Denver 1, Colorado.

Just another gentle reminder. Field Day is coming up, and the rules are on page 64.

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Audio Compression with Transistors

Simple Unit for Improving A.M. and S.S.B. Performance

BY EDWARD ARVONIO,* W3LYP

As the author points out, a compressor speech amplifier offers a means of increasing the average modulated output of a phone transmitter. The use of transistors in the unit described here provides compactness and simplicity impossible to approach with tubes.

THE use of compressor amplifiers is not new. But for those who have never made their acquaintance, I will try to explain what they do and the advantages they offer.

Most of us are familiar with the oscilloscope picture of the normal voice signal which shows a characteristic with occasional high peaks, but a large portion of which is at relatively low amplitude. In fact, the average level is only about 30 per cent of the maximum peak value. However, if the modulation level is set so that the average value results in 100 per cent modulation, overmodulation will occur on the peaks. To avoid this, the modulation level has to be set so that 100 per cent modulation occurs only on the peaks, which means that most of the time modulation is far below 100 per cent. Since maximum output occurs only at 100 per cent modulation, it follows that the maximum output capability of the transmitter is utilized only a small percentage of the time.

More complete use of the modulated amplifier's capability can be realized if the lower-amplitude portions of the speech signal, which prevail most of the time, can be raised so as to modulate the transmitter output 100 per cent, at the same time reducing the amplitude of the occasional peaks so as not to overmodulate.

* Radio Division, A.E.E.L., N.A.D.C., Johnsville, Penna.

This is what the compressor amplifier does. It is essentially an audio amplifier with a.g.c. The stronger the input signal, the less the amplification will be. As a result, voice output from the transmitter is maximum most of the time rather than at only relatively infrequent intervals. Another advantage is that the operator does not have to be careful in holding his voice level constant, nor in the distance between his lips and the microphone. Without adjusting the level control, I can speak close to the microphone or back off as much as a foot without any variation in the peak power output or tripping of the voice-control relay. Operators who have voices with very little "talk power" will be especially benefited by using this device. Using the compressor is merely a matter of plugging the unit in between the microphone and the transmitter microphone jack.

Fig. 2 shows the circuit diagram of a compressor amplifier using transistors. The first and second transistors are conventional speech amplifiers with a nominal output of 0.1 volt. The output of the second stage drives the third transistor to saturation, producing a square wave output. This output is fed back through a

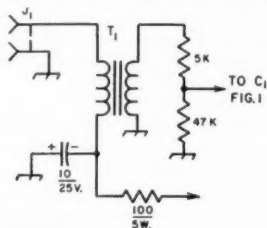
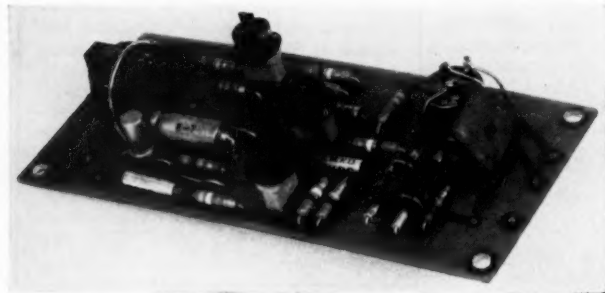


Fig. 1—Input circuit for carbon microphone. Capacitance is in μf ; resistance in ohms.

J1—Microphone connector.

T1—Microphone transformer.



The components of the transistor audio compressor are assembled on a 2 X 4-inch printed-circuit board. T₁ is at the left end, with CR₁ and C₂ slightly below and to the right. The transistors from top to bottom are Q₁, Q₂ and Q₃. The clipper diodes, CR₂ and CR₃, are in the lower right-hand corner with the output connector above.

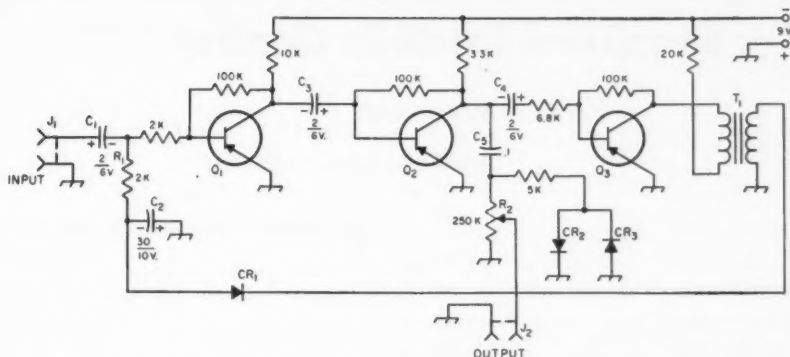


Fig. 2—Circuit of the transistorized compressor amplifier. Capacitances are in μf , resistances are in ohms, and fixed resistors are $\frac{1}{2}$ watt.

C_1, C_2, C_3, C_4 —Ultraminiature electrolytic.
 C_5 —Subminiature ceramic.
 CR_1 —SG-22 or 1N138A silicon diode.
 CR_2, CR_3 —1N48 germanium diode.
 J_1, J_2 —Microphone connector.

Q_1, Q_2, Q_3 —2N188A transistor (see text).
 R_1 —2000 ohms, $\frac{1}{2}$ watt (see text).
 R_2 —0.25-megohm potentiometer.
 T_1 —Subminiature 1:3 interstage transformer.

1:3 transformer, diode rectifier, and time-constant network to the input of the first stage. The diode rectifies the output of the third stage and applies it as d.c. bias to the base of the first transistor, changing its gain in proportion to the level of the output signal. The time constant of the RC network following the diode is selected to control the bias at a syllabic rate. The value of R_1 sets the compression level. With a value of 2000 ohms, compression starts at 0.5 mv. and the output will hold constant within 3 db. of maximum over an input change of 20 db.

The two diodes, CR_2 and CR_3 , and the 5K resistor R_2 form a clipper circuit that clips transient peaks by about 2 db. Harmonic distortion at full output is 1 per cent from 300 cycles to 20,000 cycles. The attack time is 0.05 second, which is fast enough for good s.s.b. operation.

Construction

A unit of this type lends itself well to printed circuitry,¹ although conventional wiring may be substituted, of course. The amplifier is assembled

on a board of epoxy material measuring 2 by 4 inches that will fit inside a $5 \times 2\frac{1}{4} \times 2\frac{1}{4}$ -inch Minibox, along with the dry battery that powers the unit. The arrangement of components and the etched wiring pattern are shown in the photographs. Placement of parts is not highly critical. The transistor sockets are Cinch-Jones, or similar. Other components are of the subminiature or ultraminiature type.

Transistor units having a beta factor of 20 or more should be selected.² The type 2N188A is recommended, but some 2N107s, 2N109s or 2N188s will show sufficient gain.

The unit will operate indefinitely from a 9-volt transistor battery having a diameter of about 1 inch and a length of less than 2 inches, such as the RCA V300, Burgess P6 or Eveready 226.

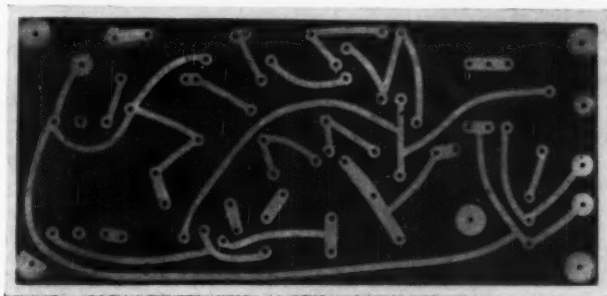
This unit can be used in other applications employing a microphone and audio system. When used with a p.a. system, it is no longer necessary to ride the gain control to compensate the difference in levels of a band and a vocalist, or to worry about audio feedback if someone screams into the microphone.

QST

¹ See Middleton & Stueber, "12AX7 Modulator Unit Utilizing Printed Circuit Techniques," QST, May, 1958.

² Priebe, "Checking Transistors," QST, April, 1958.

Bottom view of the printed-circuit board before mounting components. The upper edge of the board in this view corresponds to the lower edge in the preceding top-view photograph. Conventional wiring may be substituted.



Simplified Break-In Control

Receiver Muting and

Side Tone without Relays

BY JEROME H. HORWITZ,* W4HBO

This break-in system for blocked-grid keying systems makes use of the receiver's a.v.c. system for muting. Only a single dual triode, in addition to the t.r. switch, is required. In many cases, operating voltages can be taken from the transmitter, dispensing with the separate supply.

THE AUTHOR has long been interested in the advantages of c.w. break-in and, for about two years, had used a form of semi-break-in in which the v.f.o. and antenna relay were turned on with the first dot and held in for several seconds. The use of three relays in this circuit left much to be desired, however, as anyone who has ever tried operating with many relays banging and humming can attest.

The purchase of a new Heathkit Apache transmitter offered the possibility for a new control circuit, and it was decided to design and build same posthaste.

Several ideas had to be kept in mind in the design of this unit, which were as follows:

- 1) Utilization of the timed-sequence grid-block keying system supplied in the transmitter which, by the way, performed excellently.
- 2) No relays!
- 3) Electronic silencing of the receiver.
- 4) Electronic antenna change-over.
- 5) Ability to hear the transmitted signal in the receiver at reduced and variable gain.
- 6) Audio-tone keying monitor, independent of transmitter or receiver controls.

Circuit

A look at the diagram of Fig. 1 will reveal that the circuit has three sections. The power supply is a bit unusual, because the center tap of the transformer is *not* grounded. The supply provides -105 volts for the muting and side-tone circuits and +105 volts for a t.r. switch. Back-to-back filament transformers with two half-wave selenium-rectifier power supplies could have been used instead, but all the parts in this circuit were on hand. It might be possible to "steal" the voltages from some existing piece of gear, but the negative voltage should be regulated to stabilize the bias circuits.

V_{1A} is the receiver gain clamp. The negative keying voltage on its grid keeps it cut off with the key up. Closing the key grounds the grid at the same time that the transmitter is keyed. This allows the tube to conduct, and the negative drop across R_1 is applied to the receiver a.v.c. line. The key-up voltage on Pin 3 (cathode) should be about 20 volts positive measured from Pin 1 (grid). If the keying voltage is too small, the tube will not cut off, and the receiver will be silenced all of the time. Moving the tap on the 100K potentiometer toward ground until the cathode is about 20 volts positive from the grid will correct this. (Note: It is obvious, of course, that this circuit can be used only in grid-block-keyed transmitters.)

V_{1B} is a side-tone oscillator. It is keyed in the plate circuit. The 220K resistor R_4 isolates the circuit from the audio grid in the receiver so that when the side-tone gain is turned down the receiver audio is not short-circuited to ground. The frequency of the side-tone oscillator can be changed by adjustment of the 5000-ohm potentiometer R_3 in the cathode circuit. The tone can also be altered by changing the capacitance in shunt with R_3 .

Antenna change-over is accomplished by an electronic t.r. switch. The actual circuit was taken from *QST*,¹ and since many good circuits have been described in the last year or so, the t.r. switch will not be discussed here.

Construction

Construction is not critical, as long as the audio is kept away from the power supply. It is quite conceivable that room could be available to construct the unit right inside the transmitter, obtaining power from the transmitter power supplies.

It is desirable, however, to build the t.r. switch in a separate shielded box of some kind, and to filter the leads coming from it to prevent harmonic radiation.

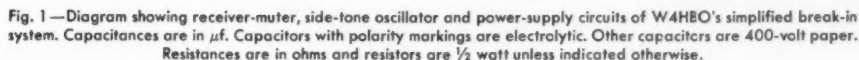
Installation

The installation of the unit is quickly accomplished as follows:

- 1) Plug the key lead from the unit into the transmitter key jack.
- 2) Connect the wire marked "Receiver A.V.C." in the schematic to some point on the receiver a.v.c. line. A good place is at the a.v.c. switch,

¹ Arvonio, "An Electronic Transmitter-Receiver Antenna Switch," *QST*, October, 1957.

* 1650 Pelham Road, N.E., Atlanta 9, Georgia.



- S₁, S₂—S.p.s.t. toggle switch.
 S₃—S.p.s.t. switch ganged to side-tone gain control.
 T₁—Push-pull audio-output to voice-coil transformer,
 secondary not used.
 T₂—Power transformer: 500 v.c.t., 40 ma.; 5 volts, 2 amp.;
 6.3 volts, 2 amp. (Thordarson 22R00 or similar).
 V₁—6SN7GT or equivalent.

(Continued on page 178)

Three Crystal-Controlled Converters

For 20, 15 and 10 Meters

BY ROBERT V. McGRAW,* W2LYH

This is largely a picture story because the author, as he puts it himself, 'can't think of much to add to the manuscript since the things are so simple and they worked right off at the first try'. What more is there to say?

IF YOU'VE been thinking of building a crystal-controlled converter, you might be interested in three little jobs, for 14, 21 and 28 Mc., respectively, which have been giving a good account of themselves. The 15-meter converter was built first, for use ahead of the trusty old BC-312. It worked so well that a second model was soon built for 20 meters, even though the receiver already covered that band, because once you get used to using a crystal high-frequency oscillator and doing the tuning down around 3 megacycles, nothing less in the way of stability and bandspread will do from then on. The next step obviously was to build one of these marvelous gadgets for 10 meters, and I can only say that it is a real pleasure to operate 10-meter c.w. when the band starts at 3 megacycles on the dial.

The three units operate equally well, although their circuits are slightly different, as dictated by the contents of the junk box and the desire to experiment. The 15-meter converter has a band-pass coupler between the r.f. amplifier and the mixer, while the other two have only the mixer grid tank tuned. With the crystal frequencies used each of the three bands comes out starting at exactly 3 megacycles, and the receiver dial calibration can be used very nicely.

In the 15-meter converter, a 6000-ke. crystal operates on its third overtone. In this circuit, the output frequency was about 20 ke. too low, and a bit of grinding was required to bring it to exactly 18,000 ke.

For 20 meters, an injection frequency of 11,000 ke. is needed: this is furnished by a 5500-ke. crystal oscillator and doubler. The extra link-coupled tank in the doubler circuit may not be necessary, but it does no harm to discriminate against the fundamental and unwanted harmonics of the crystal frequency.

The 25,000-ke. oscillator in the 10-meter converter uses a third-overtone type crystal made by International Crystal Company, permitting the use of a simple circuit.

Although 6CB6s are shown, actually 6AK5s are being used. Either type works equally well. The r.f. amplifier cathodes are brought out separately, for keying in the break-in system used here. If this feature is not desired the cathodes should be grounded directly.

The input and output circuits are arranged for low-impedance coax cable. The converters are plugged into a power socket above the main receiver so it takes only a moment to change bands. The B+ voltage is normally about 250 volts.

All of the slug-tuned coils were contained in a one-dollar kit assortment, so exact specifications are not known. A little work with the grid-dip meter will enable you to tune whatever coils are available to the desired frequencies. Note that although the same specifications are given for L_4 in all three converters, the actual inductance used will be slightly different in the 28-Mc. unit since on this band the i.f. output range to be covered is considerably larger. The slug in the coil should be adjusted to give the proper frequency coverage with the particular capacitor used to tune it.

The units are constructed on aluminum boxes, the 20-meter one on the $8 \times 3 \times 2\frac{3}{4}$ -inch size, and the other two on the $6\frac{1}{4} \times 3\frac{1}{2} \times 2\frac{1}{8}$ -inch size. The shield cans just happened to be in the junk box. In any case, the mechanical layout is not too important, so you can suit yourself on that point.

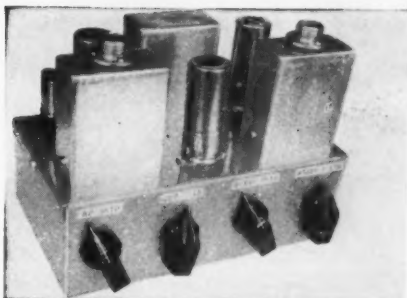
In case you're wondering about the fact that the tuned circuits are neither ganged nor broadbanded, you can forget it. Ganged tuning is not essential for covering an amateur band, and surely not for normal operation in a part of the band. Sharply-tuned tank circuits give higher gain and better protection against spurious responses.

These converters are quite sensitive, and seem to be completely free of images or other spurious signals. Just to prove that I'm really sold on the idea, a new receiver is being built which will have only one tuning range, 3 to 4 megacycles, with the emphasis on stability, bandspread, and selectivity.

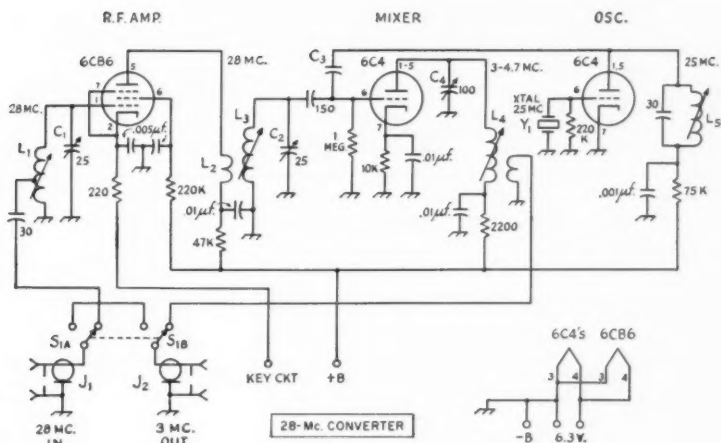
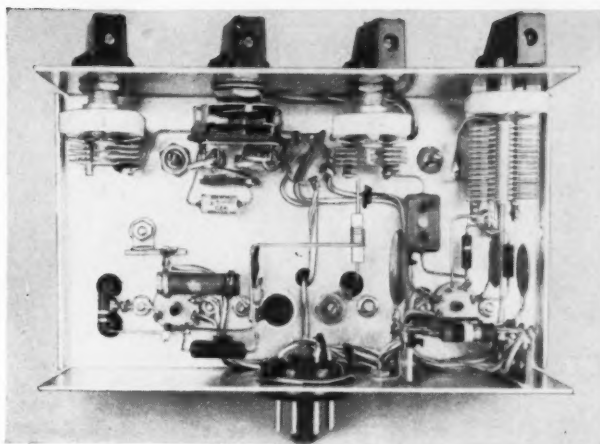
In the converter circuits on the following three pages capacitances are in $\mu\text{mf.}$ except as specified. Fixed capacitors 0.001 $\mu\text{f.}$ and larger may be ceramic or paper, ceramic preferable; others are mica or ceramic. Resistors are $\frac{1}{2}$ -watt composition.

*9 Peg's Lane, Riverhead, New York.

The 28-Mc. converter has the r.f. grid coil, r.f. amplifier tube, and mixer plate coil along the front, with the crystal, oscillator tube, mixer grid coil, and mixer tube along the rear edge. As in the other two units, the coaxial input and output connectors are mounted on top of the antenna-coil and output-coil shield cans.



Coupling between the oscillator and mixer in the 28-Mc. converter is by means of the "gimmick" capacitor shown near the center in this view. The oscillator coil, not shielded, is mounted to the right of the oscillator tube socket and is end-on in this picture. The octal plug just below it is used for plug-in power and keying connections, as in the other two converters.



C_1, C_2, C_3 —Air midgets.

C_3 —6 turns bare wire wrapped on insulating sleeve over grid lead (see photograph).

J_1, J_2 —Coaxial connectors.

L_1 —2 μ h.; 9 turns No. 28 enam., close-wound on $\frac{3}{8}$ -inch diam. slug-tuned form, tapped 3 turns from

bottom.

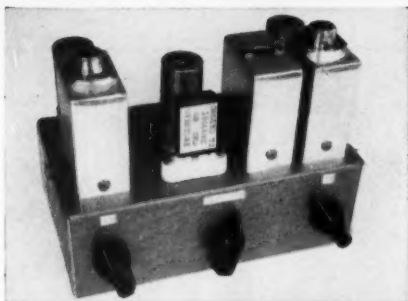
L_2 —6 turns at cold end of L_3 .

L_3, L_5 —Same as L_1 without tap.

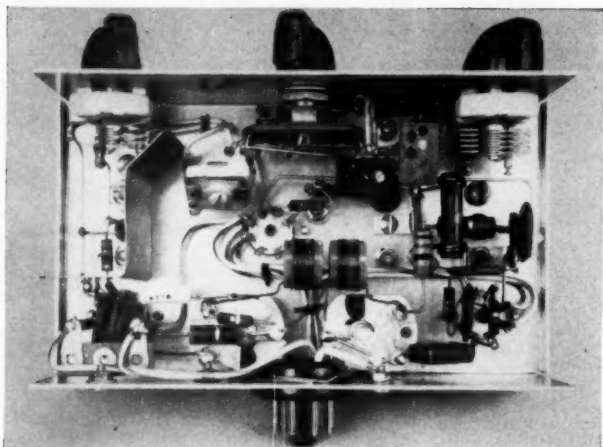
L_4 —Same as L_1 in 14-Mc. converter.

S_1 —2-pole 2-position rotary.

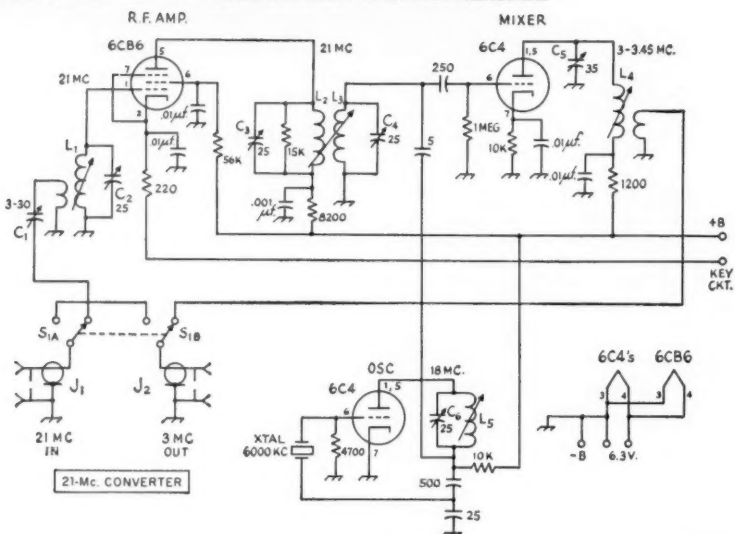
Y_1 —25-Mc. overtone crystal (International type FA-9).



The 21-Mc. converter has a band-pass coupler between the r.f. amplifier and mixer and therefore has only two tuning controls on the front. General arrangement is similar to that used in the 14-Mc. converter. An overtone oscillator is used in this unit.



The band-pass coupler coils are centrally located in this bottom view of the 21-Mc. converter. The coils are tuned by the air padders at the bottom in this view. These capacitors are adjusted from the top of the chassis



C₁—Mica compression padder.

C₂, C₃, C₄, C₅, C₆—Air midgets.

J₁, J₂—Coaxial connectors.

L₁—4 μ h.; 16 turns No. 28 enam., close-wound on $\frac{3}{8}$ -inch diam. slug-tuned form. Link 3 turns.

L₂, L₃—3 μ h.; 12 turns No. 28 enam., close-wound on $\frac{1}{2}$ -inch diam. forms (band-pass coupler).

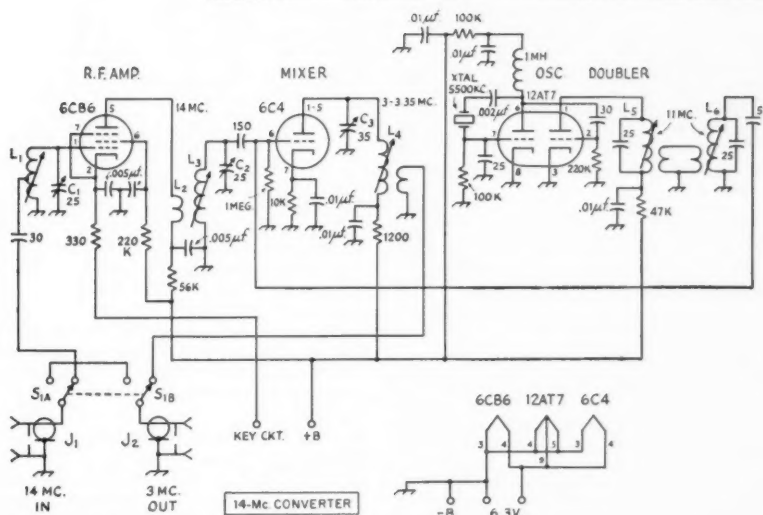
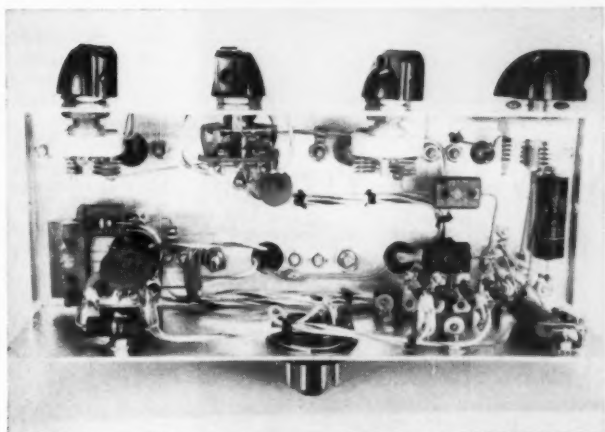
L₄—Same as L₁ in 14-Mc. converter.

L₅—7 μ h.; 22 turns No. 28 enam. on $\frac{3}{8}$ -inch diam. slug-tuned form.

The 14-Mc. converter. Along the front, r.f. grid coil, r.f. tube, mixer grid coil, and mixer plate coil, all in shield cans. The crystal, oscillator tube, oscillator tank, doubler tank, and mixer tube are along the rear edge.



Underneath the 14-Mc. converter. Components are easily identified by comparison with the top view. Slug tuning controls project through the chassis; once set, further tuning is done by means of the front-panel controls of the variable air capacitors.



C₁, C₂, C₃—Air midgets.

J₁, J₂—Coaxial connectors.

L₁—6.5 μ h.; 20 turns No. 28 enam., tapped at 4th turn from bottom, close-wound on $\frac{3}{8}$ -inch diam. slug-tuned form.

L₂—10 turns No. 28 enam., at cold end of L₃.

L₃—Same as L₁ without tap.

L₄—App. 80 μ h. (see text); No. 36 close-wound, $\frac{3}{8}$ inch long, on $\frac{5}{16}$ -inch diam. slug-tuned form. Link 6 turns.

L₅, L₆—Same as L₁, with 3-turn links.

S₁—2-pole 2-position rotary.

Q57—



"The tower is quite impressive. . . ."

Sixty Cents Per Foot

(Slightly Higher East of W6)

BY DON SUTHERLAND,* K6JKK

WITH the F_2 season rapidly approaching, we had been working the little 50-watter over in an effort to improve its efficiency. A compressor was built for the modulator and a new tank circuit was installed. But this seemed to be about as far as we could go with the rig itself.

Then we began to look at some of the fine 6-meter beams now on the market, and our little four-element job on the TV mast didn't look too impressive. The upshot was that we finally invested in a shiny new eight-element Yagi.

But those who move into new houses know how suddenly the old furniture takes on a shabby look. It was immediately evident that the new squitter needed a new support to give it proper dignity and a chance to show its worth. But with most of the cash tied up in the "mortgage" there was little left for "furniture." We decided to try our hand at building a wood tower.

Construction

At the local lumber yard we bought eight 20-foot 2×2 s of seasoned Douglas fir and 400 feet of redwood 1×2 furring strip. Each of the four legs of the tower is made up of two 2×2 s butted end to end and spliced together with a 3-foot length of the same material overlapping the joint. Two $\frac{1}{4}$ -inch stove bolts 4 inches long, with washers, were used on each side of the joint.

Two of the legs were laid out with the splice laps facing each other. The bottom ends were spread 2 feet apart and the top ends 6 inches over all. The first horizontal crosspiece was nailed on at 2 feet from the bottom end, using four seven-

*922 Cayuga St., Santa Cruz, California

Years ago, before the market was flooded with "boughten" crank-ups and lay-overs, a ham's standing on the air could be judged with good accuracy by how close to the stratosphere he dared stretch his homemade wood-lattice mast. Although this art is now an almost forgotten one, the lattice mast, properly built, still remains an inexpensive means of getting a reliable sky hook at reasonable heights. Witness this forty-footer by K6JKK.

penny galvanized box nails at each bearing. Before nailing, each joint was primed with white paint. This 2-foot spacing was maintained for the next four horizontal members. Then the spacing was progressively reduced by one inch each time a horizontal brace was added until the 20-foot mark was reached. A constant spacing of 20 inches was then maintained until the top of the mast was reached. The next step was to add the diagonal cross-bracing members, as shown in Fig. 1, alternating them in zigzag fashion.

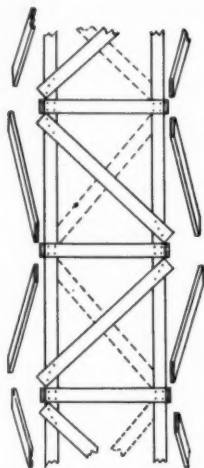


Fig. 1—Sketch showing details of cross bracing. At the sides are shown relative positions of diagonal braces on side surfaces. Dotted lines indicate positions of diagonal bracing on rear side.

Joining the Sides

After the first side was completed a second side was made identical to the first. It is advisable to paint both faces of both sides before proceeding with the final assembly of the tower. The author neglected to do this and it was a real chore to get at the inside after assembly. Aluminum paint was used and it took about three quarts.

When the paint was dry, the two sides were placed on edge and held in position at the

proper tapered spacing, by stakes driven into the ground, while the horizontal and diagonal braces forming the third side were added. The inner surface of the third side can be painted before adding the fourth side, and the individual pieces of the fourth side can be painted before they are nailed in place. Be sure to add the diagonal braces on the third and fourth sides in the manner shown in Fig. 1. When this is done, the tower will have an identical appearance on all four sides.

At the 10- and 30-foot levels, the tower was stiffened by running a pair of wires fitted with turnbuckles diagonally from corner to corner.

Rotator Mounting

A TV rotator was used and it was decided to place it on top of the tower, rather than inside, so that it would be more accessible. The mounting for the rotator is a 3-foot length of 1-inch water pipe screwed into a floor flange. This mounting is supported on a piece of 2×4 fitting in between horizontal members approximately 2 feet from the top. The upper end of the pipe runs through a $1\frac{1}{4}$ -inch hole bored in another piece of 2×4 securely spiked across the top of the tower.

Foundation

The foundation for the tower consists of four 4-foot lengths of 4×4 lumber well painted and set in post holes with the earth well tamped around them. The exposed top ends of the ground posts were notched out to fit the legs of the tower so that the bottoms would rest on wood rather than on the ground. (Be sure to notch the posts with the faces of the notches parallel with the direction from which the tower will be raised.) Matching holes for $\frac{3}{8}$ -inch bolts were drilled in the tower legs and ground posts.

Raising the Tower

When this baby is lying down, it is quite an awesome sight, and at this point there might be some doubtful moments. But rest assured it will go up! The tower was first moved into position so that two legs straddled two of the ground posts and the bolts were slipped into place to act as pivots in raising the tower. Then the top end was lifted onto a 10-foot stepladder while the antenna was mounted and four guy wires attached 6 feet down from the top.

At this point, we called in K6GHA, W6NOE and K6LHG, all rabid 6-meter men who sympathized with the project. As they lifted, the stepladder was gradually moved toward the base until the tower rested at an angle of about 30 degrees. A long rope was attached near the top of the tower and led up to the roof of the house. With one man pulling from the roof and three men pushing, the whole assembly rose majestically until the remaining two legs dropped into place on the ground posts. The entire job took only 10 minutes and all our fears proved to be groundless.

The tower is quite impressive and has been

(Continued on page 162)



"The exposed ends of the ground posts are notched out to fit the legs . . ."



"At this point we called in K6GHA, W6NOE and K6LHG . . ."



"When this baby is lying down, it is quite an awesome sight . . ."

A V.F.O. for 6 Meters

Flexibility for the Rockbound V.H.F. Man

BY THOMAS BECKAGE,* W3LCK

EVER since thousands of crystals in the range between 8350 and 8550 kc. were released on the surplus market some years ago the 6-meter band has had a series of pileups at 50.1, 50.25, 50.4 Mc. and so on up through the band. If you have wished for an inexpensive way to avoid being rockbound on these popular channels you may be interested in the v.f.o. described here. It is simple and economical to build, having been designed for the 6-meter job only.

Construction

A 5 by 6 by 2-inch chassis provides plenty of space for the v.f.o., and may even include a built-in power supply, if desired. Because of heat and vibration problems the power supply may introduce, it is recommended that the supply be made external to the v.f.o. It goes without saying that the power source should be well filtered. A small supply will suffice, as only 150 to 175 volts d.c. at 20 to 30 ma., and 6.3 volts a.c. at 0.3 amp. will be required. Small power transformers such as are commonly used in TV boosters and converters are ideal for this purpose. The full-wave center-tapped type is recommended.

Except for the mounting of L_1 , C_3 and C_4 , there is nothing critical about the construction of the v.f.o. The coil, L_1 , is constructed by cementing a full length of B & W Miniductor No. 3007 to a block of polystyrene 1 by 3 by $\frac{1}{4}$ inch in size. Use a good quality coil dope. Clamp the coil in place with one rib in contact with the block. Flood the contact area with cement and allow it to dry. Then repeat the application of cement and allow the assembly to dry overnight. Drill the ends of the block for mounting, as shown in Fig. 1. Connection to the coil should be made by unwinding a portion of the coil at either end, to get enough wire for the leads.

Circuit

As may be seen from Fig. 2, the v.f.o. circuit is about as simple as it can be and still do the job. The popular series-tuned Colpitts circuit is used, with the grid of the 6AU6 oscillator on 12.5 Mc. to 13.5 Mc., for coverage of the band. The plate circuit is on 25 Mc. The v.f.o. is intended for use with transmitters in which the first stage is an oscillator-triplex for 8-Mc. crystals. The coupling method shown converts the first stage to a straight-through amplifier on 25 Mc., so a 4700-ohm swamping resistor is placed across L_2 to minimize the tendency to spurious oscillation in this stage. The resistive loading also broadens the response of the oscillator, so that one setting of the slug in L_2 will

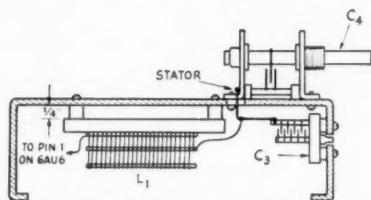


Fig. 1—Arrangement of the coil and tuning capacitors in the 6-meter v.f.o. Be sure that the access hole in the front panel for C_3 will not be covered after mounting the main tuning dial on C_4 .

suffice for coverage of the first megacycle of the band.

The output cable used is RG-62/U. Other types of cable can be used, but variations in capacitance may make a change in the number of turns in L_2 necessary. The outer conductor of the cable should not be relied on for a bond between the transmitter and the v.f.o. Use a separate piece of copper braid or strap to bond the two together, and make it as short and direct as possible.

Adjustment

After wiring is completed and checked, apply power to the v.f.o. The regulator tube should ignite, and current through it will be about 10 to 15 ma. Next, measure the voltage developed at the 6AU6 grid, using a vacuum-tube voltmeter, or volt-ohmmeter of the 20,000-ohms-per-volt type. Negative voltage developed on the 6AU6 grid shows that the tube is oscillating. It should be about 5 volts.

Set the main tuning capacitor, C_4 , to near maximum capacitance, and by adjusting C_3 bring the frequency of oscillation to 12.5 Mc. This can be checked at that frequency, if a receiver is available for tuning in that range; otherwise listen for it at 25.0 or 50.0 Mc. Be sure that the signal being checked is at the right frequency, and that you are not listening to an image or other spurious beat. A cross-check with a calibrated absorption-type wavemeter is desirable here. The note, as monitored with the receiver beat oscillator on, should be stable and free of a.c. modulation. The tuning range of C_4 may now be checked by following the frequency change with the receiver. With the capacitor value given for C_4 the range will be about four megacycles at 50 Mc. If greater tuning range is wanted use a larger capacitor for C_4 . For a smaller tuning range remove one plate from C_4 , and use slightly more capacitance in the padder, C_3 .

* 108 Throop St., Dunmore, Penna.

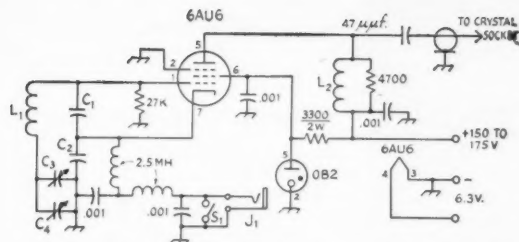


Fig. 2—Schematic diagram and parts information for the 6-meter v.f.o. Capacitors other than C_{1-4} are ceramic. Resistors $\frac{1}{2}$ watt unless specified.

- C_1, C_2 —300- μ f. temperature compensating capacitor (Centralab TCZ-300).
 C_3 —50- μ f. trimmer (Hammarlund APC-50).
 C_4 —20- μ f. variable, double-bearing (Hammarlund MC-20S).

If initial checks are made with the v.f.o. before it is mounted in its case, a slight readjustment may be necessary when it is boxed in. Allow 15 to 20 minutes for warmup before making final frequency adjustments.

With a 26-inch length of RG-62 U cable connected between the output of the v.f.o. and the crystal socket of the transmitter, peak the slug in L_2 for maximum output from the driven stage. If a peak cannot be reached with the slug, turns will have to be added to or removed from L_2 .

Though a jack is shown in the cathode lead, keying of the transmitter will probably be done in a later stage. V.h.f. transmitters seldom employ oscillator keying, as break-in operation is not often used in 50-Mc. work. If the plate supply to the oscillator is not turned off with the

- J_1 —Open-circuit jack.
 L_1 —32 turns No. 20 tinned, $\frac{3}{8}$ -inch diam., 2 inches long (B & W Miniductor No. 3007). See text.
 L_2 —16 turns No. 20 enamel on $\frac{3}{8}$ -inch iron-slug form.
 S_1 —S.p.s.t. toggle switch.

rest of the transmitter a key or the spotting switch may be useful when a station on one's own frequency is being worked. The control may, of course, be handled with a remote switch or relay.

Any type of metal cabinet can be used to house the v.f.o. The tuning dial may be any vernier type that has sufficient tension to prevent the frequency from being altered by brushing past the control knob. Any of the three different sizes of imported vernier mechanisms now available at moderate cost will do nicely.

About six of these units have been built recently in this locality (Northern Pennsylvania), all with satisfactory results. The only troubles that have developed were due to wiring errors, or to marked lack of attention to mechanical considerations in the mounting of the frequency-determining components.

QST

Strays

Here are the June schedules for the various MARS technical nets.

First Army MARS

(Closed down until September)

AF-MARS Eastern

(Sundays 1400 EDT, 3295, 7540 and 15,715 kc.)

June 7 — Fiberglass Reinforced Plastics in Electronics.

June 14 — Air-Sea Communications Rescue Aids.

June 21 — Electronics in Oceanographic Surveys.

June 28 — Project assignments and end-of-season wrap-up. (This net will recess during the months of July and August, resuming schedules on September 13.)

AF-MARS Western

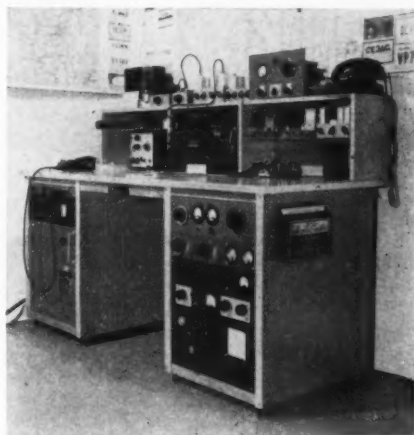
(Sundays 1400 PST, 3295, 7832.5 and 143,460 kc.)

June 7 — Air-Ground Communications on Historical Long Range Flights.

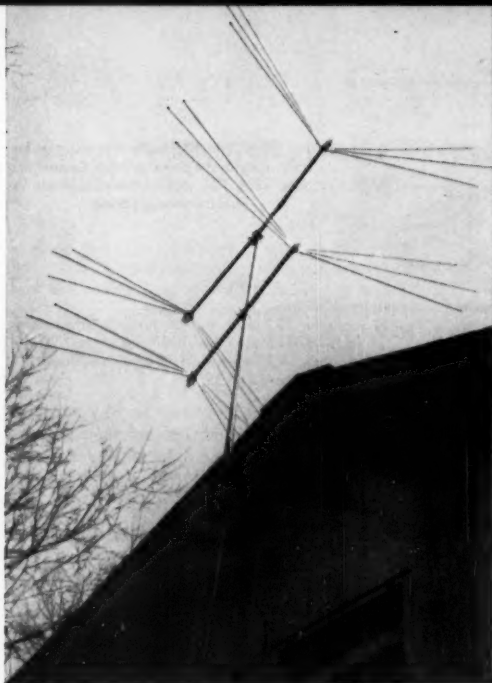
June 14 — Storage of Intelligence: Sight and Sound.

June 21 — The Space Age and California.

June 28 — Equipment Utilization and Conversion Information. (This net will recess during July and August, resuming schedules on September 6.)



QST author W2LYH (see his article on crystal-controlled converters on page 26 of this issue) has a neat station laid out for maximum convenience. The converters can be seen on the top shelf. He has another article in the works, on a break-in system for c.w.



Some Experiments with Small-Scale Beams

BY YARDLEY BEERS,* W2AWH

Fig. 1—21-Mc. and 28-Mc. beams made of television receiving antennas. The 21-Mc. antenna is above.

Miniature Antennas

HOW SMALL can an antenna be and still be useful? The "short" beam has been familiar to the radio amateur for several years. However, this writer can find no record of any amateur attempting to carry the idea to the limit. Most experimenters with short beams have been content to work with elements no shorter than one-half of normal length; that is, with a total physical length no smaller than one-quarter of a wavelength. Yet the usefulness of dipole antennas of much smaller length has been thoroughly demonstrated. The standard mobile whip antenna is only about 0.035 wavelength at 3.5 Mc.

The short short antennas discussed here are not offered as a 100-percent substitute for the full-sized article. But they do surprisingly well, all things considered, and may solve the antenna problem for the man with no space.

These thoughts led the author to investigate the possibility of building beam antennas with elements shorter than a quarter wavelength. The answer to the question as to how short the elements may be is a matter of opinion and, of course, depends upon many factors. One of the principal factors is whether the loading coils are to be fixed-tuned or whether they are to be tuned by direct access or by some remote-control device. In this regard the mobile antenna obviously has a great advantage over an antenna at a fixed location. From the beginning of this investigation it has been assumed that the antenna is to cover an entire band without retuning the loading coils. Since the widths of the various bands are quite different, the degree of difficulty of building such an antenna depends upon the band. On one hand, the width of the 21-Mc. band is only about one thirty-fifth of the center frequency while the width of the 3.5-Mc. band is about one tenth of its center frequency. There is also the question of how much performance may be sacrificed for compactness of size.

Reliability

The factors involved in the performance are gain, front-to-back ratio, efficiency, and reliability. Of these, the writer has found that the question of reliability is the most critical. This is directly related to the question of bandwidth. It is generally possible to make a considerable reduction in the size of an antenna without an important reduction in the efficiency and gain at

* 4 Ploughman's Bush, Riverdale 71, N. Y.

the center frequency, but the bandwidth shrinks to an unacceptable value. The worst feature of narrow bandwidth is not the intrinsic inability of covering a wide frequency range with high efficiency but the accompanying vulnerability to various detuning effects: the effects of snow and rain, of changing the position of the antenna, of placing another antenna nearby, and possibly the effects of weathering of the antenna itself. In addition, replacement of parts damaged by storm requires very precise duplication of the original components.

Whether it is better to use a very short beam with its accompanying lower reliability and superior gain or a simple dipole with greater reliability but lower gain is a question to which no final answer can be given. The most important factors governing an attempt at making an answer are the local weather conditions and the objectives of the operator. In a dry climate a much narrower bandwidth can be tolerated than in a wet one. Does the operator insist upon uniform performance under all weather condition, or is he willing to go off the air (or switch to an inferior auxiliary antenna) in bad weather to gain superior performance in good? The writer's opinion is to favor the short beam as indicated in detail below.

Front-to-Back-Ratio

High front-to-back ratio in a two-element beam never has seemed to this writer a very important feature. The main lobe is so broad under the most favorable conditions that little additional QRM is likely to be experienced with a ratio somewhat poorer than optimum. And even if a high ratio can be attained, it is usually close to optimum only over a very narrow frequency range, while it is well known that gain may be maintained over a much larger band.

However, it is possible to have high gain and a poor back-to-front ratio. Consider the W8JK antenna, which has a gain of about 5 db., while the back-to-front ratio is 0 db.; that is, the antenna is bidirectional. Although it is not usual, a two-element parasitic beam can be tuned up in a similar way. In the more usual procedure of tuning the parasitic element as a reflector, slight losses can materially affect the back-to-front ratio while having little effect upon the forward gain. To obtain perfect cancellation in the back direction, the field set up by the reflector must be exactly of the same magnitude as that of the driven element but opposite in phase. If at some standard distance we call the relative field strength of each 1.0, then the total field strength in the forward direction is 2.0 and the forward-to-back ratio is infinite. But if, with the same current in the driven element, losses cause the field from the reflector to drop to 0.5, the field in the forward direction is still as high as 1.5 while that toward the back is 0.5, resulting in a back-to-front ratio of 3 in voltage, or 9.5 db.

Construction

One favorable opportunity presented to the

constructor of short antennas is the possibility of using end loading or special construction utilizing several conductors diverging from the center of the antenna. Such construction, which is rarely practical mechanically with full-sized antennas, aids significantly not only in increasing the bandwidth but also in some cases in reducing losses by reducing the concentration of electric field.

The experimental antennas described below represent, the author feels, approximately the practical limit to which antenna shortening can be carried. While these antennas have not been engineered to perfection, data will be given to aid the reader to build similar or improved antennas of the same types.

The use of television receiving antennas as a source of materials was suggested by the work on the Wonder-Bar Antenna.^{1,2} The kits which were used by this writer were obtained from Lafayette Radio at \$2.60 each. Several units purchased at different times were found to differ slightly in dimensions. Therefore, the dimensions given below are nominal and, for this reason and others, the coil specifications are to be regarded as approximate.

These kits contain six 43-inch rods, $\frac{3}{8}$ inch in diameter, for a "biconical" driven element, and two 47-inch rods of the same diameter for a parasitic reflector. A 37-inch piece of 1-inch diameter tube is supplied for the boom, but the effective boom length is somewhat longer because the driven element projects forward, the two halves intersecting at an angle of about 135 degrees. The boom lengths given below are the actual lengths of the booms.

A 21-Mc. Antenna

The first antenna constructed was for 21 Mc., using two of these kits, one for the driven element and one for the reflector. Each dipole consists of four 43-inch rods on the outside and two 47-inch rods in the center, employing the original booms. New holes for the U bolts used for holding the booms on the mast were drilled near the ends, but the upper boom was made to overlap the lower one by a few inches so that the two could be locked together as a rigid structure with a third U bolt. The total boom length is 7 feet, and the swinging radius is 5 feet. Because of the angle, the over-all length of each element is 7 feet, slightly less than three tenths of the length of a half-wave dipole. This antenna is the upper one shown in Fig. 1.

The loading coils were made of Miniductor 3014 (1-inch diameter, 8 turns per inch). By coincidence both have 17 turns, and the link coil on the driven element consists of 4 turns of No. 12 enameled wire, self-supporting, wound around the center of the loading coil. As this first antenna was experimental and its final frequency of operation was not certain, the loading coils were

¹ Bishop, "The 'Wonder-Bar' Antenna," *QST*, November, 1956.

² Ryan, "Technical Correspondence," *QST*, February, 1957.

made plug-in by the use of strips of banana plugs and jacks, and the coils are supported from these only by their leads. Originally, the spacing between centers of the jacks was $\frac{1}{2}$ inch, but after the antenna was in operation for some time breakdown resulted from dirt, and the spacing had to be increased to $\frac{3}{4}$ inch. (The power input is about 150 watts.) The use of the plugs and jacks proved to be such a convenience that it was included in later antennas.

For adjustment the antenna was mounted about ten feet above ground. The coil in the reflector was adjusted to resonate this element at about 20 Mc., using a grid-dip meter whose calibration had been checked. Then, starting with a slightly larger coil in the driven element, turns were removed and the link coil was varied to get the best match to 50-ohm line, using a standing-wave bridge. Then the antenna was hoisted into its final location shown in Fig. 1, where it is about 30 feet above ground over the end of a wing of the house. This location is far from ideal. In one direction is the main part of the house, whose roof level is almost as high as the antenna. In the other are several nearby trees, some of whose branches practically overhang the antenna.

28-Mc. Antenna

Preliminary results from operation of this antenna were so favorable that it was decided to mount a 28-Mc. one four feet lower on the same mast, as shown in Fig. 1. This antenna is of similar construction except that the boom, 6 inches shorter, was made of a single piece of tubing as one just happened to be on hand. The loading coils are similar to those of the 21-Mc. antenna except that both have only 10 turns. The link coil is 2 turns of No. 12 wire $1\frac{1}{4}$ inches in diameter. The reflector resonates at about 27 Mc.

Performance

Evaluation of performance should be based upon objective measurements as well as upon subjective observations from actual results on the air. It is only honest to state that present measurements do not decide whether or not these antennas are performing in accordance with what can be expected from known theoretical considerations. Theoretically these short two-element beams should have gains only slightly less than those of full-sized beams, perhaps about 4.5 db. Whether such gains are obtained is unknown. They can be determined only by comparative measurements relative to a half-wave dipole located in entirely equivalent positions. Because of the difficulties of the author's location, to which he has alluded, it is impossible to erect suitable reference antennas.

Some significant objective information can be learned from the standing-wave ratio curves. Those pertaining to the 21-Mc. antenna are shown in Fig. 2. The dashed curve is with the 28-Mc. antenna removed while the solid curve is with it in place. The s.w.r. of the 28-Mc. antenna

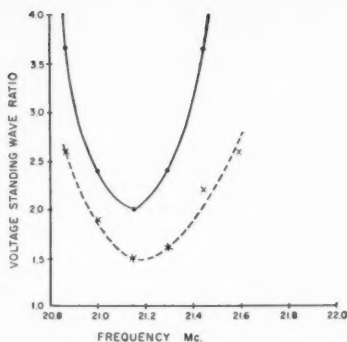


Fig. 2—Voltage standing-wave ratio versus frequency of 21-Mc. antenna. Solid curve applies when 28-Mc. antenna is in position, and the dashed curve applies when it is absent.

is shown in Fig. 3. From the point of view of transmission-line efficiency, the performance can be said to be very satisfactory. With the forty feet of RG-58 U cable that was used, the losses at 28 Mc. would be about 0.75 db. with a perfect impedance match, and by methods which have been discussed in an earlier article³ it can be shown that with a standing-wave ratio of 4:1 the losses increase by only 0.9 db. Since the ratio is considerably smaller over most of the band, the losses can be considered to be close to minimum.

At 21 Mc. the losses are even smaller. While the standing-wave ratio is reasonably low, the variation of the line input impedance at 21 Mc. causes some inconvenience by requiring retuning. The standing wave ratios of both antennas vary slightly as they are rotated.

An attempt to measure the back-to-front ratio was made by putting up a test antenna at the same height as these antennas and connecting it to a crystal detector and a meter. These measurements indicated a ratio of about 6 db. with the 21-Mc. antenna and about 3 db. with the 28-Mc. one. The 28-Mc. antenna was in position during the measurements on the 21-Mc. one. Because of the proximity of the test antenna and various disturbing objects it is questionable whether these measurements are completely valid. However, reports from stations worked on the air are consistent with them. These results are something less than desired, and indicate that objects in the near fields of the antennas may cause some losses. This hypothesis is strengthened by the fact that the 21-Mc. antenna, which is more in the clear, has definitely the better ratio, and it could be supposed that the ratios could be improved with better locations.⁴ The ratio of the 28-Mc. antenna was measured as a function of

³ Beers, "Match, or Not To Match?," *QST*, September, 1958.

⁴ Another possibility is radiation from the outside of the coax transmission line. Unavoidable coupling between the antenna and coax shield practically always results in a certain amount of such radiation, and the situation tends to become less manageable as the antenna is made shorter. — Editor.

frequency and was found to be nearly independent of it within the range shown in Fig. 3. Both antennas can be used in a slight drizzle, with a change in characteristics. In a heavy rain it is necessary to switch to an auxiliary antenna.³ It is probable that the susceptibility to moisture could be reduced by a "weatherized" construction of the loading coils.

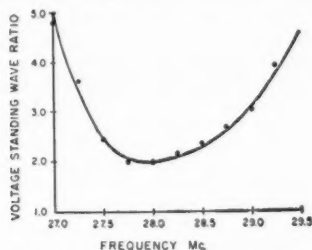


Fig. 3—Voltage standing-wave ratio of 28-Mc. antenna versus frequency.

There remain the subjective observations, and here the conclusions are most enthusiastically favorable. These antennas were used for about six months in the winter of 1957-1958 with power inputs from 50 to 175 watts. During the 1959 ARRL DX Contest (c.w.) these beams were used for a total of about 35 hours with a power input of 150 watts, and 130 contacts with a total of 43 different countries were made. In the some 28 years the writer has been an amateur he has never had a rotary beam on these frequencies, but the system which has been described has far outperformed anything he has had previously, although undoubtedly inferior to multi-element full-sized beams.

An Experimental 14-Mc. Dipole

The experiments just described indicated that the practical limit of shortening might not have been reached, at least for single dipoles. Therefore, it was decided to build an experimental dipole of approximately the same construction for 14 Mc. The resulting antenna is shown in Fig. 4, and its standing-wave curve is shown in Fig. 5. There was one difference in construction: the outer ends of the rods were joined by sections of the same type of rod about 14 inches long. One advantage of this modification is greater mechanical rigidity, and a more important one is an improvement in the radiation resistance and bandwidth that should result. The reader desiring to reproduce any of these antennas would be well advised to include this modification.

The loading coil of the antenna shown in Fig. 4 consisted of 15 turns, 8 turns to the inch, $1\frac{3}{4}$ inches in diameter (Miniductor No. 3022). The link consisted of a single turn, about one inch in diameter, of plastic-insulated No. 18 wire inserted in the center of the loading coil. The antenna was tuned up for the c.w. end of the band but the standing-wave curve, Fig. 5, indicates that reasonably good transmission-

line efficiency could be obtained over the entire band if the coil were tuned to the center. However, the variation of impedance with frequency required frequent retuning of the antenna coupler even within the c.w. segment. Several contacts were made—including one with a new country, 9G1BQ—and these indicated that the antenna was comparable with, but slightly inferior to, a full-sized vertical dipole which is on hand. Unfortunately, an accident forced the writer to take this antenna down a little sooner than he wished, but since he felt that he had observed the main features, he did not put it up again.

A theoretical analysis indicates that the efficiency is at least as low as -2.8 db. relative to a half-wave dipole because of losses in the loading coil, and the width of the standing-wave ratio curve suggests the possibility that it may be as low as -6.7 db. (The directivity relative to a half-wave dipole is -0.4 db., and thus the gain relative to an ideal half-wave dipole may be as low as about -7 db.) The efficiency could be improved by using larger conductors, a loading coil of higher Q , and, most particularly, a less screened location. However, if the losses were reduced the resistance also would be less, and the frequency response, now barely adequate, would deteriorate.

Conclusions

As stated at the beginning of this article, the present work was undertaken to find how small a beam antenna can be made and still give performance comparable with that of a full-sized

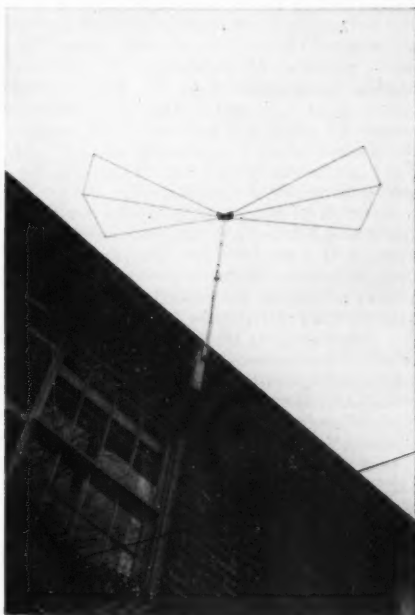


Fig. 4—Experimental 14-Mc. dipole.

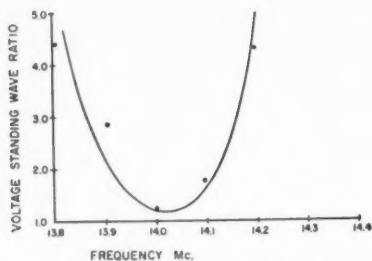


Fig. 5—Voltage standing-wave ratio versus frequency of 14-Mc. experimental dipole.

antenna under favorable conditions. The fact that the antennas that were built outperformed any which the author had used previously, in many years of experience, is only incidental. These antennas have not been completely engineered by weatherizing of the loading coils or by using the very best possible form of end loading. Nevertheless, the work with them has led the writer to the firm opinion that the present 21-Mc. beam, with its 0.15-wavelength elements, is representative of the smallest beam which is practical.

It can be shown theoretically that, in the absence of ohmic losses, the bandwidth of a short dipole of fixed length, expressed as a percentage of the center frequency, varies in proportion to the third power of the frequency. The bandwidth thus deteriorates very rapidly as the frequency decreases; at 21 Mc. it is 2.4 times smaller than at 28 Mc., and at 14 Mc. it is 8 times smaller than at 28 Mc. The introduction of parasitic elements will reduce the bandwidth further, but does not change this general situation. This rapid variation of bandwidth is illustrated roughly by comparison of the standing-wave curves, Figs. 2, 3, and 5. One of the writer's reasons for concluding that the 21-Mc. beam is the smallest which is practical is that its s.w.r. curve has the maximum variation that is acceptable under ordinary circumstances.

If a short antenna is made of large conductors and mounted in the clear, the losses are negligible when the Q of the coil is large compared with the Q of the antenna. It may be shown that the Q of a short antenna of fixed length varies inversely with the third power of the frequency and therefore rises rapidly as the frequency is decreased, while the Q of a well-designed loading coil remains approximately constant. King⁵ has calculated the radiation resistance and reactance of short dipoles made of single rods. From his work the Q of a dipole 0.15 wavelength long, if made of single rods, can be estimated to be no more than about 150. However, with the type of construction employing three rods, the Q can be supposed to be somewhat lower, perhaps 50 or 75. The measured Q of one of the 21-Mc. loading coils is 285. Thus the present situation is one where the coil losses are small but are on the verge of becoming important. The introduction of a parasitic element tends to lower the radiation resistance. Thus any

further reduction in size beyond 0.15 wavelength is almost certain to result in the situation where the advantage of the added directivity obtained from the parasitic element is nullified by increased losses. Superior types of end loading or of coil construction are unlikely to give more than a minor improvement.

The beams which have been considered here have been made of linear elements. However, many amateurs use beams made of loop or quad elements. These have smaller swinging radii than beams of comparable gain made of linear elements. One might wonder about miniature beams of the loop type. The bandwidths of small loop antennas also vary approximately with the third power of the frequency, and in this respect they offer no advantage or disadvantage. However, the directional properties of linear antennas change very little as size is reduced, while there is a radical change in the directional properties of loops. The maximum of radiation for small loops lies in the plane of the loop instead of at right angles, as is the case with standard-sized quad elements. Thus a beam made of small loops would have the boom in the planes of the loops rather than at right angles, and the loops would extend out beyond the boom. The effect would be to increase, rather than to decrease, the swinging radius. This type of construction therefore is undesirable.

Thus the writer believes that beams made of 0.15-wavelength linear elements are about the smallest which can give reasonably effective performance, although this performance is subject to the reliability considerations mentioned in the introduction. At the same time, those amateurs who want the optimum in performance and have the space available are advised to use full-sized beams made of large conductors and with wide spacings between the elements.

⁵ King, *Journal of Applied Physics*, Vol. 23, p. 1174, October 1952.

Strays

Even the back pages of *QST* get read. W8DAE refers to a Stray printed on page 172 of the April issue and says that auto horn QSOs are nothing new. Way back in 1926 he and SADA drove a Model T over from Cleveland to Oberlin to visit 8RY, and had a key rigged up across the horn.

Please Write Your Postal Zone Number

- By including your correct zone number each time you write your address you can speed delivery of your own mail and help cut Post Office costs. The Post Office must do extra work to deliver each letter, parcel and magazine that does not show the correct postal zone number in the address. It will help you — it will help the Post Office — and it will help us. Thanks.

A Junk-Box D.C. Volt-Ohmmeter

A view of the completed volt-ohmmeter. The different switch positions are labeled with Tekni-Cals.



A Simple Test Instrument for the Beginner

BY LEWIS G. McCOY,* WHICP

Got a moderately well-stocked junk box? If it contains a reasonably sensitive d.c. meter, you have the principal component of a useful test meter. The assembly described here will give you many times the value of any small parts you may have to buy to complete the circuit.

You don't have to be a ham very long before you find that certain tools are required for keeping a station in working order. This doesn't mean that your equipment will be continually breaking down — at least let's hope not! — but that there are times when you are likely to have problems. When trouble occurs you'll find that a very handy instrument to have is a combination volt-ohmmeter. If you know what the voltages in a piece of equipment should be — and usually the instruction manuals provide such information — checking them with your voltmeter will help in locating faults and correcting them. In other words, you can do your own service work.

A combination d.c. volt-ohmmeter is such a simple instrument that any Novice should be able to build one. However, it should be pointed out right now that the unit in this article is described strictly as a junk-box project. If you have to pay full price for the meter used in this instrument you'll be better off to buy a ready-built volt-ohm-milliammeter, or a kit. However, if you already own a good quality 0-1 milliammeter, or a microammeter, this test instrument should only cost a couple of dollars to construct. Also, there are plenty of meters on the surplus market that can be purchased for a fraction of the usual price.

Before getting into construction details let's see how a voltmeter works. Fig. 1 shows the basic circuit of a d.c. voltmeter. For the purpose of explanation let's assume the meter, *M*, has a 0-1 milliamperes movement — or, to put it another way, when one milliamperes of current flows

through the meter the pointer will register full scale.

Let's also assume that the voltage, *E*, of the battery is 5 volts. Using Ohm's Law, $R = E/I$, if we divide five volts (*E*) by 0.001 ampere (*I*) the answer will be 5000 ohms. (Note that the current has to be expressed in amperes before it can be substituted in Ohm's Law. One milliamperes equals one one-thousandth of an ampere, or 0.001 ampere.) If a 5000-ohm resistor is inserted in the circuit at *R*, the meter will read full scale with five volts applied, provided the resistance of the meter itself is small — not more than 50 ohms or so.

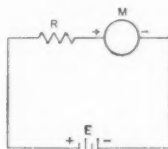


Fig. 1—D.c. voltmeter circuit.

What will the voltage be if the meter reads half scale — 0.5 milliamperes or 0.0005 ampere — and the resistor is still 5000 ohms? Again using Ohm's Law, $E = IR$, it is found that the voltage is 2.5. If you divide the meter scale into five equal parts, each division will represent a difference of one volt, with a 5000-ohm resistor in the circuit.

Suppose you want a full-scale reading of 10 volts. With a 0-1 milliamperes meter movement, *R* would have to be equal to 10 volts divided by 0.001 ampere, or 10,000 ohms. Now divide the meter scale into ten parts and each division will represent a difference of one volt. By now you will have observed, probably, that when you use a meter with a 0-1 ma. movement you will always need 1000 ohms in series for each volt in the full-scale reading. Such an instrument is called a 1000-ohms-per-volt voltmeter.

But suppose you have a 0-100 microammeter instead of a 0-1 milliammeter. From Ohm's Law you will find that a 50,000-ohm resistor will be

*Technical Assistant, QST.

required for a full-scale reading of five volts. In this case the voltmeter could be classed as a 10,000-ohms-per-volt meter.

The important point to think about when considering the 1000-ohms versus the 10,000-ohms-per-volt meter is that the latter gives more accurate readings in high-resistance circuits. For example, suppose you want to check a circuit that has five volts applied to two 5000-ohm resistors in series. When you connect a voltmeter across one of the resistors, you would expect it to read 2.5 volts. But if the instrument is a 1000-ohms-per-volt meter with a full scale of five volts, it too will have a resistance of 5000 ohms, and since its resistance is in parallel with the 5000-ohm resistor to which it is connected, the resultant resistance is 2500 ohms.

Of course, the voltage drops across 2500 ohms and across 5000 ohms are different, although originally the voltage drops across both 5000-ohm resistors were the same. Actually, the voltmeter would read $\frac{1}{2}$ of 5 volts, or $1\frac{1}{2}$ volts. On the other hand, if a 10,000-ohms-per-volt meter having a full scale of 5 volts were connected across the same 5000-ohm resistor, the resultant resistance would be about 4500 ohms. This voltmeter would read 2.4 volts, which is considerably closer to the true voltage.

In other words, the greater the number of ohms per volt, the more accurate the readings in high-resistance circuits. Incidentally, this is the reason why the vacuum-tube voltmeter is so useful in checking such circuits. This type of instrument usually has a resistance of at least 10 megohms, so in most cases the voltage being checked will not be affected appreciably by connecting the test instrument in the circuit. However, once you understand its limitations, a 1000-ohms-per-volt voltmeter is suitable enough for most amateur needs.

The Ohmmeter

In servicing a piece of equipment you'll often find it necessary to check the value of an unknown resistor or—even more common—to check continuity in a circuit. For this purpose, an ohmmeter is a very handy instrument to have in the shack. An ohmmeter is simply a low-range d.c. voltmeter provided with a source of voltage (usually dry cells) large enough to make it read full scale. In order to check a resistance, the voltmeter and battery are connected in series with the unknown resistor. The meter reading will then be less than full scale; how much less depends on the value of the unknown resistor being checked.

For example, let's assume that a 3-volt battery, a 3000-ohm resistor, and a 0-1 ma. milliammeter are connected in series. From our previous discussion of how a voltmeter works you know that with this combination the milliammeter will read full scale. Now, suppose that a resistor of unknown value is connected in series in the circuit and the meter reads 0.5 ma., or half scale. A quick check using Ohm's Law

$$(R = \frac{E}{I}) \text{ would show that 6000 ohms total resistance would be required for a reading of 0.5}$$

ma. By simple subtraction, 3000 ohms (the known resistance) from 6000 ohms indicates that the unknown resistance is 3000 ohms. It is possible to calibrate the meter in ohms rather than milliamperes, and thus read resistance directly.

The ohmmeter part of the combination instrument described in this article can be used for measuring resistances up to about 50,000 ohms. Two $1\frac{1}{2}$ volt Penlite cells are connected in series with a 0-1 milliammeter and a 3000-ohm resistor. Table I gives the approximate value of external resistance versus meter reading.

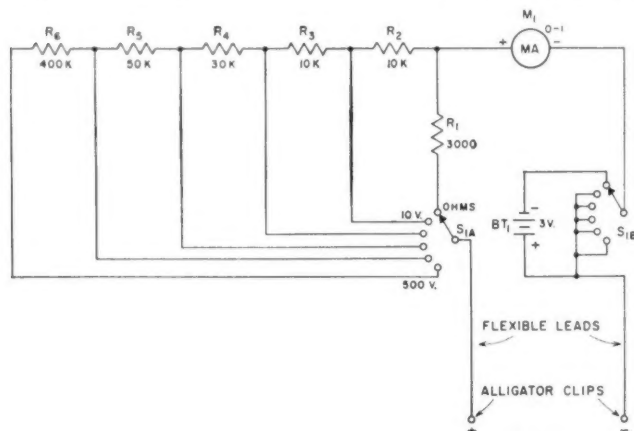


Fig. 2—Circuit diagram of the d.c. volt-ohmmeter. Resistors are $\frac{1}{2}$ watt.

Voltage ranges are 10, 20, 50, 100 and 500 volts with the meter and resistance values specified. The resistors are connected in series to add up to the required value at each position of the range switch.

BT₁—3 volts; two $1\frac{1}{2}$ -volt Penlite cells in series.
M₁—0-1 d.c. milliammeter, low internal resistance.
R₁—3000 ohms, 5 per cent.
R₂—10,000 ohms, 5 per cent.
R₃—10,000 ohms, 5 per cent.

R₄—30,000 ohms, 5 per cent.
R₅—50,000 ohms (51,000 ohms, 5 per cent).
R₆—400,000 ohms (390,000 ohms, 5 per cent; 1-watt size suggested for more conservative operation).
S₁—2-pole 6-position rotary (Mallory 3226J).

Table I

Ohmmeter Calibration

Meter Reading (Ma.)	Ohms
1.0	0
.97	100
.86	500
.75	1000
.60	2000
.50	3000
.375	5000
.30	7000
.25	10,000
.20	12,000
.14	18,000
.10	27,000
.06	47,000

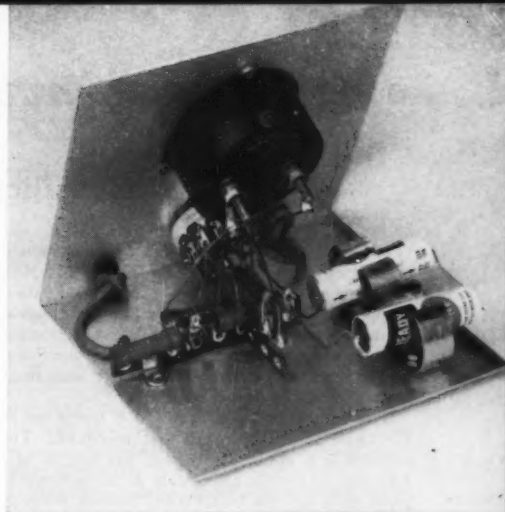
Constructing the Unit

Before attempting construction, study Fig. 2 and the photographs to familiarize yourself with the unit. This particular instrument has voltage ranges of 10, 20, 50, 100, and 500 volts, in addition to the ohmmeter range mentioned above. A two-pole, six-position switch, S_1 , is used to change the various ranges by switching different combinations of resistors in series with the meter. The resistor values given in Fig. 2 are for a 0-1 ma. meter. If a more sensitive meter is used the required resistance values can be found by using Ohm's Law as described earlier. Also, you may want different ranges than those used in this unit; if so, calculate the resistor values accordingly and then get a parts catalog and check on the availability of resistors of the values needed. (If necessary, resistors can be connected in series or parallel to get an exact value.) But don't plan on any voltage ranges higher than 500 volts, because this is the maximum rating of S_1 , and also is the maximum voltage that may be applied safely to a resistor of the type specified in Fig. 2.

Resistors are available in several different resistance tolerances, such as 10, 5, and 1 per cent. If you are a stickler for accuracy then by all means use 1 per cent resistors. However, you'll find 1 per cent resistors a bit more expensive than 5 per cent units. For most amateur work the 5 per cent resistors will be adequate.

The test meter shown in the photos is built on a piece of aluminum measuring 5 by 10 inches. The aluminum piece is bent at the center so that the front panel and base both measure 5 by 5 inches. However, almost any kind of box or container large enough to hold the parts can be used. In our unit, the meter and switch are mounted on the panel and all the other components are installed on the base. Two tie-point strips, one having two and the other six terminals, are used for holding the resistors.

Two $1\frac{1}{2}$ -volt Penlite cells are used to power the ohmmeter and these are mounted in two "broomstick" holders. These holders are available at practically any hardware or dime store, and cost 10 cents each. Connections to the cells are made by soldering leads to the end button and to the metal case. The case is negative and the button is positive.



The meter and switch are mounted on the front panel and all other components on the base. Note that the two Penlite cells are mounted in "broomstick" holders.

If you purchase the switch specified in Fig. 2 you'll find that it comes with a wiring sketch to show which connections are which. However, you don't *have* to have a switch with six positions. If your junk-box job has fewer it only means you won't have as many ranges.

Your radio parts dealer stocks test-lead wire and you'll need about six feet of it. It is a good idea to buy three feet of red-covered wire and a like amount of black, using the red wire for the positive test lead and the black for negative. In the unit shown, the ends of the test leads that are permanently connected to the circuit are run through rubber grommets mounted on the panel. A single knot in each lead, at the back of the panel, keeps the lead from being pulled off the connection point in the course of normal use.

After the wiring is finished you can check the lowest voltmeter range by measuring the $1\frac{1}{2}$ or 3 volts of the Penlite cells. A check at higher voltage can be made by measuring the voltage in a voltage-regulated circuit, such as one using a VR-105 or VR-150.

Now that you have a test meter the next question you probably are asking is, "How do I use it?" The answer to this would take quite a bit of explanation — in fact, an entire *QST* article. Such an article was published some time ago,¹ and it is suggested for study by anyone interested in the use of a test meter.

One last word of caution: Always make it a point to be *extremely* careful when working around live circuits — and by "live" we mean *any* circuit that has voltage on it. It may sound trite, but it is always better to be safe than sorry. Also, when using the ohmmeter for continuity checks be sure all circuit voltages are off; if the circuit is "live" you're likely to burn out the test meter.

QST

¹ McCoy, "Test Meters and How To Use Them," *QST*, July, 1957.

• Recent Equipment —

The Hallicrafters SR-34

THE SR-34 by Hallicrafters is a bandswitching transmitter and receiver for 50 and 144 Mc., with universal power supply and modulation equipment in a space well under one cubic foot in volume. As the first two-band v.h.f. station, complete in one package ready for use, to be offered on the amateur market, it is of more than ordinary interest on several counts.

The transmitter delivers 7 to 8 watts on 50 Mc., and about two-thirds of that on 144. The receiver is a double-conversion job (23.25- and 1.65-Mc. i.f.) with completely separate tunable front ends for the two bands. Tuning range is just over five megacycles, allowing for examination of the busy commercial frequencies on the low side of the 50-Mc. band, and for tuning the MARS and CAP frequencies at the edges of the 2-meter band. An effective noise limiter and a low-threshold squelch system are included. Provision is made for c.w. in both transmitter and receiver.

As might be expected, this versatility entails some complexity and crowding in the matter of operating controls. The front panel view shows 13 controls, but there are 7 more under a hinged cover along the left front panel. These come into play when the transmitter is shifted from one band to the other. With all this, however, the tuning operations are simple and straightforward, and even the inexperienced operator will catch on to the use and adjustment of the equipment quickly. An interesting by-product of this flexibility is that the station can be used for "cross-banding." Bandswitching is separate for transmitter and receiver.

Looking at the front view of the SR-34, we see



The Hallicrafters SR-34 transmitter-receiver for 50 and 144 Mc. Power cables and a collapsible whip antenna are carried in the cover, shown here on top of the case.

the slide-rule dial at the top, with S meter at the right and a small built-in speaker at the left. The dial has a 0-100 logging scale between the calibrated scales for 50 and 144 Mc. Eight knobs, all alike, control the major functions. The three in the upper row at the right are for squelch threshold, main tuning and audio volume, in that order. Across the bottom are the main power switch, function switch (P.A., RCVR, CAL, AM, CW), phone jack, meter switch, send-receive switch, b.f.o. pitch control, receiver bandswitch, and r.f. gain control. Three rather inaccessible slide switches just above the last three knobs control the b.f.o., the noise limiter and the a.v.c.

The S meter doubles as an r.f. voltmeter for tuning the transmitter. The individual stage adjustments and the antenna loading are all "tune-for-max" operations, as the operator switches the meter from stage to stage. The last switch position at the right puts the meter into service as an S meter.

Crystals are plugged in through an access hole in the left side of the case. Choice of any of the four crystals or v.f.o. is made with a switch that is the first of the seven hidden controls. The v.f.o. is not included in the SR-34. If one is used, it is plugged into a jack on the back of the unit. Other controls under the hinged cover on the front of the SR-34 are for oscillator, tripler, doubler, final plate and antenna-loading capacitors, and the transmitter bandswitch. How these circuits work is of some interest, and will be covered later.

The exposed part of the back of the SR-34 carries the power connector, two fuses, keying jack, gain control, carbon-crystal microphone switch, v.f.o. jack, microphone jack, and external speaker and relay-switching terminals.

FCDA specifications governed the packaging of the unit to a considerable extent. The case had to be "drip-proof," which accounts for the unvented top. The bottom of the case is perforated metal and the sides have louvers, but we feel sure that the operating temperature of the SR-34 could be lowered markedly if the top were perforated, in the manner of many of the current crop of receivers and transmitters. The manufacturer assures us, however, that the range of operating temperature was studied carefully and that the cooling provisions are adequate.

The case has a rubber-edged cover that is clamped tightly in place by drawbars. Cables for a.c. and battery operation, and a telescoping whip antenna, are carried inside the cover. A lift-up leather carrying handle is mounted in a recess on the top side of the cover. The SR-34 closed is a smooth metal box with a handle, but you won't want to take it on long plane trips; it's a hefty

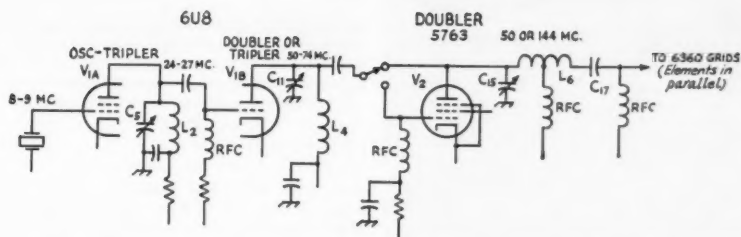


Fig. 1—Simplified diagram of the SR-34 transmitter circuit, showing the method used for developing 50- and 144-Mc. drive for the final amplifier. With this arrangement the only coil switching is in the final amplifier plate circuit.

package that will eat up a major portion of your baggage allowance.

Some Circuit Tricks

So much for what the SR-34 is. Let's see what it does, and how it does it. Anyone who has tried to design a simple band-switching transmitter for 50 and 144 Mc. will find the system used here of interest, for only three tubes are used in the r.f. section of the SR-34 transmitter. A simplified schematic diagram, Fig. 1, shows how the switching is handled. We found an idea or two here that we've filed away for future use.

A 6U8 pentode section is the crystal oscillator, using crystals in the 8- to 9-Mc. range. The oscillator triples in its plate circuit to 24 to 27 Mc. (Crystals at 6, 12 or 24 Mc. may also be used, though grid drive developed along the line may be a bit on the low side with 6-Mc. rocks.) The triode section of the 6U8 doubles to 50 Mc. or triples to 72 Mc., depending on the band. The plate circuit tunes to both frequencies, so the operator must take care that he hits the right harmonic in 144-Mc. service. (There is no output from the final if you get the wrong harmonic.) Then comes a 5763, and the interesting part. On 144 Mc. this stage doubles, the 72-Mc. energy from the 6U8 triode being switched to the 5763 grid. (Parts designations used here are taken from the SR-34 manual.) On 50 Mc. the 5763 "just goes along for the ride" and its plate tuning capacitor, C_{15} , is effectively in parallel with the 6U8 tuning capacitor, C_{11} . The 144-Mc. plate coil of the 5763 stage, L_6 , merely looks like extra lead length at 50 Mc., and the final stage is driven directly from the 6U8 doubler, through L_6 and C_{17} . The circuit is completed by the input capacitance of the 6360.

This neat trick is not explained fully in the instruction book, and it takes a bit of studying the diagram to see how the switching is accomplished. The operator may be misled by the operating procedure outlined in the book, for it is not made clear that C_{11} and C_{15} are effectively in parallel on the 50-Mc. range, and that consequently only one of them need be adjusted when tuning up on 6.

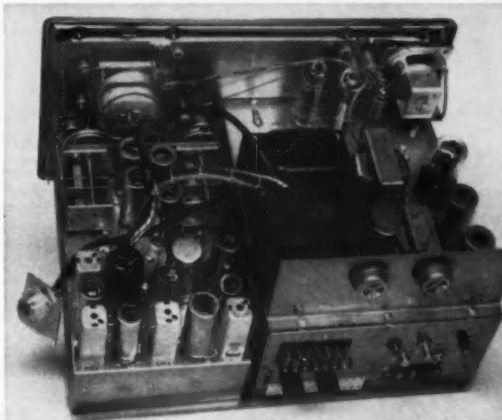
The final amplifier is a 6360 dual tetrode, with its elements in parallel. The only coil switching in the whole transmitter takes place in the plate

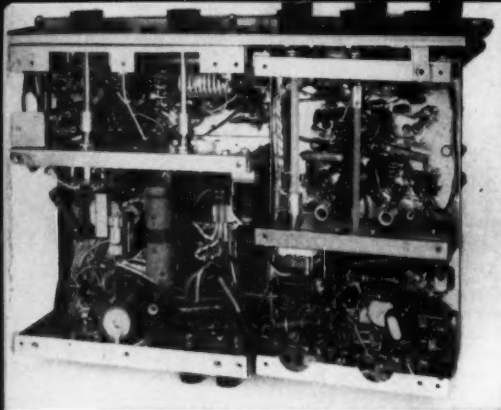
circuit of the 6360. The compact structure and low output capacitance of the 6360 allow parallel operation without appreciable loss of efficiency, even at 144 Mc.

Two front ends of similar design solve many of the receiver problems encountered in designing a stable tuning system for two v.h.f. bands. A 6BK7 cascode r.f. amplifier feeds a 6U8 pentode mixer, the triode portion serving as the tunable oscillator. Power and i.f. output are switched between the converters in changing bands, but the oscillator for the band in use runs continuously. This takes care of the drift problem that shows up in other v.h.f. receivers where plate voltage is removed from the oscillator during standby periods. Temperature compensation is used in the oscillator circuits, and warm-up drift is held to a very low value. We were gratified to see that c.w. signals remained tuned in when we switched back to receiving after a period of transmitting. The stability of the SR-34, while not the equal of good crystal-controlled converters working into a stable communications receiver, is still adequate for effective c.w. work. Receiver selectivity is 50 kc. at 60 db. down.

The output frequency of the mixers is 23.25 Mc. A 6BE6 second mixer, with crystal-controlled injection, converts to 1.65 Mc., at which frequency there are two stages of amplification, a 6BJ6 and the pentode section of a 6U8. The 6U8 triode is the b.f.o. A 6AL5 detector and noise limiter, and a 6A5S audio amplifier and squelch complete

Looking at the bottom of the SR-34, we see the transmitter at the upper left, the receiver front ends at the right, the receiver i.f. and audio portion at the lower right, and the power supply and audio components at the lower left.





Interior view of the SR-34. Construction is in subassemblies, with receiver at the left and transmitter r.f. section at the right front. Power supply and audio components are at the right rear. Note that two completely separate front-end systems are used in the receiver, upper left.

the receiver proper. Audio output is fed into the second stage of the common audio system for additional amplification.

Power Supply

The SR-34 can be operated from a 6- or 12-volt battery, or from 115 volts a.c. Separate cables are supplied for battery or a.c. operation. The battery cable comes wired for 12-volt service, but

conversion to 6 volts is shown in the instruction book. A separate cable fitting is supplied so that cables for both battery voltages can be made available. The differences are in the external cable fitting, and no changes need be made in the unit itself, other than substitution of a 20-amp. fuse for the 15-amp. fuse normally supplied for 12-volt service.

The power supply has a transistor section for efficient operation on battery power, and selenium rectifiers for the a.c. portion. Power drain is 8 amp. on receive and 9 on transmit, from a 12-volt system. A.c. power consumed is 112 watts on receive and 130 on transmit. A model (SR-34AC) is available for a.c. only. It is otherwise similar to the universal model described. Both units comply with FCDA specs for matching funds. Case size: $8\frac{5}{16} \times 14\frac{1}{4} \times 12\frac{3}{8}$ inches. Weight: 76 lbs.

—E. P. T

The Hammarlund HQ-145 Receiver

THE HQ-145 is a 12-tube (dual-conversion above 10 Mc.) general-coverage communications receiver which, in four bands, tunes from the broadcast band (.54 Mc.) to 30 Mc. Two separate tuning controls are used, one for general coverage and the other for bandspread. Short-wave broadcasting bands are marked by red segments on the general-coverage dial while the amateur bands are indicated by boxed-in areas. For amateur-band tuning the general-coverage control is set at the high-frequency end of the particular band and the calibrated bandspread dial is then used for tuning

through the range. The bandspread dial is calibrated every 10 kc. on the 80-, 40- and 20-meter bands, 20 kc. on 15 meters and 50 kc. on 10 meters. There is a special tuning range for 20 meters to provide optimum dial spread for this band. One revolution of the bandspread dial covers about 115 kc. on 20 meters.

The operating controls on the HQ-145 are spaced to provide plenty of room for handling. The range switch (band switch) is easy to turn — you certainly don't have to struggle with the switch to change bands on this receiver. How-

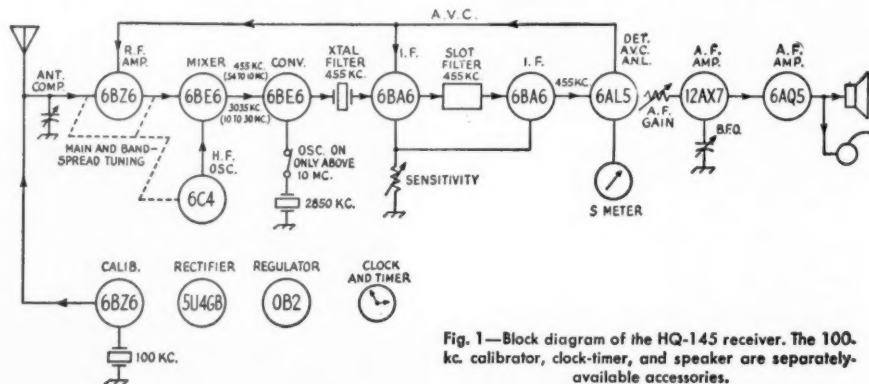


Fig. 1—Block diagram of the HQ-145 receiver. The 100. kc. calibrator, clock-timer, and speaker are separately available accessories.

ever, the r.f. and i.f. gain controls are both at the lower right-hand corner of the panel with the bandspread knob just to the left of them; thus if you like to "ride" the gain controls while tuning, you'll have to do your tuning with the left hand and touch up the gains with the right.

A block diagram of the receiver is shown in Fig. 1. An antenna compensator, adjustable from the panel, allows the operator to resonate the r.f. input circuit. Since the receiver has more than enough gain on the broadcast band (.54 to 1.6 Mc.) an untuned coupling circuit is used between the r.f. stage and mixer when receiving on this band. On all other bands, tuned coupling is used.

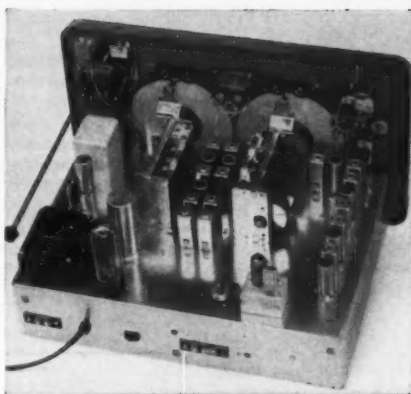
The 6BZ6 r.f. stage is followed by a 6BE6 mixer. The tunable local oscillator uses a separate tube (6C4), and on signal frequencies from .54 to 10 Mc. the mixer output is on 455 kc.

On the higher frequencies (10 to 30 Mc.) double conversion is used for greater image rejection, with a first i.f. of 3035 kc. A second 6BE6, a converter, follows the mixer. The crystal-controlled oscillator section of the converter operates at 2580 kc., combining with the 3035-kc. i.f. signal from the first 6BE6 to give output on 455 kc. On .54 to 10 Mc., the 2580-kc. crystal oscillator is switched off.

The crystal filter, which is at the input end of the 455-kc. i.f. amplifier, has a front-panel control which allows the selection of six different bandwidths. A phasing capacitor, also adjustable from the front panel, provides the usual rejection control of the conventional crystal filter. The SENSITIVITY control — which, as shown in the block diagram, is an i.f. gain control — is located in the cathode circuit of the first and second i.f. amplifiers. However, before going on to the second i.f. amplifier, the signal is fed into a bifilar "T" trap.¹ This is the same filter used in the popular HC-10 and the higher-priced HQ-170² receiver. This device, called a "slot filter," has the same effect on signals as a *Q* multiplier as far as rejecting unwanted frequencies is concerned. It is operated just like a *Q* multiplier, too, having two controls, one for notch frequency and one for notch depth.

One diode of a 6AL5 tube is used as the detector and a.v.c. rectifier. A.v.c. voltage is applied only to the r.f. amplifier and first i.f. stage. The other diode operates as an automatic noise limiter. Separate toggle switches allow switching the a.v.c. and noise limiter in and out of the circuit. A portion of the a.v.c.-noise limiter circuit uses a special RC printed-circuit network.

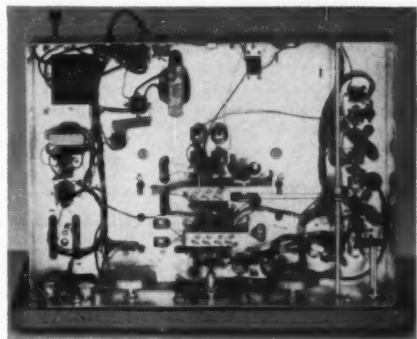
When the mode switch is turned to c.w.-s.s.b., the 12AX7 b.f.o. section is connected. The b.f.o. Colpitts oscillator has a range of plus or minus 2 kc. and includes temperature-compensating components for stability. The b.f.o. frequency is adjustable from the front panel. A resistance-coupled audio amplifier shares the 12AX7 tube with the b.f.o., and is coupled to the 6AQ5 audio power amplifier. Part of the audio circuit also



View of the HQ-145 with its gray case removed. The 100-kc. crystal calibrator (an accessory) is shown plugged in near the right-hand corner of the chassis. The cans and tubes nestled between the tuning capacitors belong to the antenna, local oscillator and r.f. stages. The i.f. strip runs along the right edge of the chassis while the power supply occupies the left foreground. The slot filter is on the panel just above the i.f. strip. The long shaft protruding from the panel is used for adjusting the clock-timer from the rear of the cabinet.

uses printed-circuit components. A special automatically regulated negative-feedback circuit in the HQ-145's audio circuit³ provides "hi-fi" reception with low settings of the audio gain control. This is useful when strong broadcast-band signals are being received and good quality audio is desirable. As the gain control is advanced for weak signals, the feedback in the audio circuit decreases and extra audio selectivity is obtained.

Regulated voltage (108 volts) is applied to the local oscillator plate and to the screens of all tubes ahead of the detector. Regulated voltage is



This bottom view of the receiver shows the neat layout of the components and cable harness. The shaft running the breadth of the chassis near the right is the antenna compensator control shaft. It is string-coupled to a capacitor mounted near the "front-end" components. The tuning-control flywheels are visible near the panel.

¹ QST, August, 1957, page 38.

² QST, February, 1959, page 42.

³ QST, January, 1957, page 34.

also used to power the crystal calibrator when it is switched into the circuit.

A few optional accessories are available for use with the HQ-145. There is a 100-ke. crystal calibrator, a portion of which uses a printed circuit. When it is switched in the circuit by the mode switch it gives 100-ke. markers throughout the tuning range of the receiver. These markers are sufficiently strong, even at 30 Mc. The calibrator contains a "crystal puller" which makes it possible to zero beat the oscillator to WWV. Another accessory is a Telechron timer which will turn on the receiver automatically at any predetermined time and, of course, is a clock as well. A speaker

in a matching gray cabinet is also available.

Connection points and controls at the rear of the chassis include a two-post terminal strip for the speaker, a female 117-volt chassis connector to which an external relay can be connected for remote control of the receiver, a three-post terminal strip for antenna-ground connections, and a zero adjustment control for the S meter. The HQ-145 is 19 inches wide, 13 inches deep and 11 inches high.

A 23-page instruction manual comes with the receiver. The HQ-145 power requirements are 117 volts, 60 cycles at about 80 watts. A 220-volt a.c. model is also available.

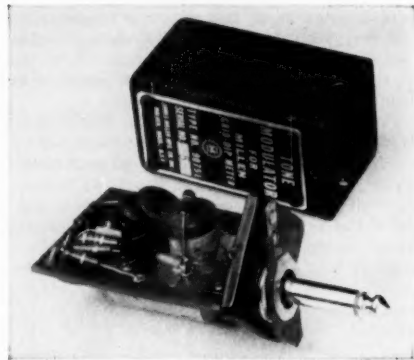
— E. L. C.

Millen Tone Modulator for G.D.O.

THE Type 90751 Tone Modulator is a transistor audio oscillator powered by a self-contained mercury battery. It is designed specifically for modulating the Millen Grid-Dip Meter, by being plugged into its headphone jack, but can be used for a number of other jobs around the ham shack.

The circuit diagram is shown in Fig. 1. Basically, the circuit is a transistor *RC* phase shift oscillator, designed to oscillate at about 850 cycles, with output taken from the tap on L_1 . L_1 is not a fundamental part of the oscillator circuit but is used for coupling the oscillator to the grid circuit of the g.d.o. A unique on-off switching arrangement is used: when the unit is plugged in, a ring-shaped spring around the plug shank is pushed back against the plug base to close the battery circuit and thus turn on the tone oscillator. (The fiber shim shown in the photograph between the ring and the base prevents the switch from being closed accidentally during handling prior to use.) All components, including the mercury battery, are mounted on a flat phenolic board. The large circular component at the center of the board is the tapped inductance, L_1 . The 2N107 transistor, Q_1 , is just to the left of L_1 .

The tone oscillator can be used with a key for code practice, and has sufficient power output to drive a pair of headphones without amplification. It can also be plugged into the mike jack of a phone transmitter to provide a tone for modula-



The Millen Tone Modulator for grid-dip oscillators is built to fit a standard phone jack.

tion checks and for generating m.c.w. emission. The waveform, although not purely sinusoidal, is good, and the output into a high-impedance load is slightly under 1 volt peak.

The Tone Modulator measures $4 \times 1\frac{1}{4} \times 1\frac{1}{4}$ inches over-all and weighs $4\frac{1}{4}$ oz. It is made by the James Millen Manufacturing Co., Inc., Malden, Massachusetts.

— E. L. C.

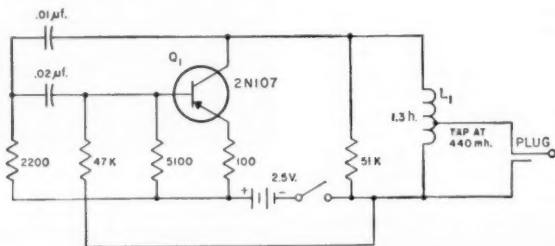


Fig. 1—Diagram of the 90751 Tone Modulator.

Hamfest Calendar

California — The Orange County ARC will hold its fifth annual picnic on Sunday, June 7, from 1100 to 1600, at Irvine Park, Orange County, just a few miles from Disneyland, Santa Ana, Fullerton, Anaheim, Newport Beach and Costa Mesa. All sorts of entertainment at the park, from horseback riding to boating. The picnic program will include a baseball game, transmitter hunt, QSL card contest, and a swap table. Advance registration is \$1.00, and should be made with Ted Glick, K6LJA, 1009 River Lane, Santa Ana. Advance registrations are also available from many of the electronic supply houses in southern California.

Illinois — The annual Starved Rock RC hamfest will be held on Sunday, June 7, at the LaSalle County 4-H Home and picnic area on Route 71 southwest of Ottawa. (Same place as last year). Advance registration (prior to May 28) is \$1.00, or \$1.50 at the gate. Contact G. E. Keith, W9MKS, RFD #1, Box 171, Oglesby.

Iowa — The Iowa 160-meter hamfest will be held in Webster City on Sunday, June 28. For further information contact G. D. Warland, K9AII, 927 Elm St., Webster City.

Maine — The third annual Augusta hamfest will be held on Sunday, June 14, at the Calumet Club, West River Road, Highway 104 North. The doors will open at 0900, with a turkey dinner served at 1230. There will be meetings of the Sea Gull Net, the Barnyard Net, and RACES. A transmitter hunt and a swap table will be on the program. Advance registrations are \$2.25, at the door \$2.50, children \$1.50. Get your tickets by contacting Wilfred Lemieux, W1VXU, 151 Cony St., Augusta, by June 12.

Mississippi — The Cleveland ARC will hold a hamfest on Sunday, June 14, at Weber's place five miles north of Indianola, on highway 49W. For further information contact Thomas C. Pate, K5HYO, P. O. Box 812, Cleveland.

Mississippi — The Biloxi ARC will hold its annual hamfest on June 6 and 7 at the Biloxi Community House. Contests. A shrimp boil on Sunday. Tickets are \$1.00 each. For more information contact the BARC, Box 1574, Irish Hill Station, Biloxi.

Nebraska — The Dawes County ARC will hold its annual ham family picnic at Nebraska State Park, Chadron, on Sunday, June 7, beginning at noon. Each family is to bring its own food, which will then be put on picnic tables and served family style. Coffee and soft drinks will be furnished by the club. There will be a swap table and a hidden transmitter hunt. For further information contact Lynn Bilyeu, K9ODF, 406 Hensens Drive, Chadron.

New Mexico — The Totah ARC of Farmington, New Mexico, will hold its annual hamfest and picnic on July 4 and 5 at Pine River Dam, Vallecito Res., which is about 20 miles northeast of Durango, Colo. This is a wonderful place for an outdoor outing, plenty of free campsites, boating, water skiing, horseback riding and cabins at a nominal fee. Swap table. For further details contact Leonard M. Norman, W5CIN, 903 North Butler Ave., Farmington, New Mexico.

New York — The Second Annual Long Island Teenage Hamfest will be held on June 6 at 1000 at the South Side Senior High School in Rockville Centre. Sponsored by the South Side High School RC, events will include contests, films, equipment exchange, and 2- and 6-meter transmitter hunts. Tickets are 50¢ in advance or 75¢ at the door. Tickets and further details are available from John Cunitz, K2TBU, 10 Buckingham Rd., Rockville Centre.

Ohio — The fourth annual picnic sponsored by the Northeastern Ohio 50 Mc. Group will be held on Sunday, June 21, at Wadsworth Memorial Park, Wadsworth. Highlights of the program include "Queen for the day," swap shop, and activities for the XYL and kiddies. Picnic begins at 1200. Mobile check-in on 50.4 Mc. Complete catering service on the grounds. Registrations at \$2.00 per family available from Rev. Charles Burkey, K8LMG, 3156 Rose Bay Blvd., Barberton.

Pennsylvania — The Penn-York Hamfest Association will hold its first hamfest on Saturday, June 20, beginning at 1300, at the Elkland Legion Hall in Elkland, Pa. The program will include speakers, contests, and dinner. Ladies will be invited to tour the Corning Glass Center during the afternoon. Reservations at \$3.50 per person include everything. For more information, contact the Penn-York Hamfest Ass'n., c/o CARA, P. O. Box 301, Corning.

Tennessee — The Mid-South ARA will hold its annual hamfest on June 14 at the customary location on the grounds of the Shelby County Penal Farm. This is located off Highway 70 a few miles east of the Memphis city limits. The program will run from 100 to 1500. Tickets are \$1.50 including a box lunch, or 50¢ without. Free soft drinks. Mobile talk-in on 3980, 29,627 and 50,500 kc., monitored commencing at 0800.

Washington — The annual picnic of the Royal Order of Hoot Owls will be held on June 21 at Gaffney Resort on Lake Wilderness near Renton. Registration commences at 0900 and closes at 1300, open only to ROHO membership and families.

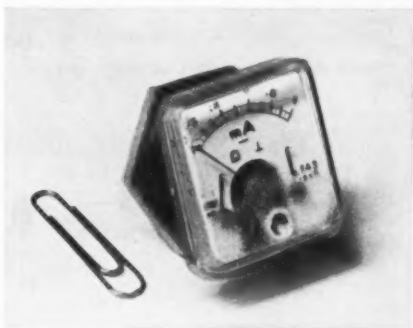
West Virginia — The first annual hamfest of the Marshall County ARA will be held June 7 at Glendale Park, Glendale. For further details contact Louis Kaufman, K8LUS, 1212 6th St., Moundsville.

West Virginia — The West Virginia State Hamfest will be held at Jackson Mills 4-H Camp near Weston, on U. S. Route 19, on July 11 and 12. Registration prior to June 1 will be \$1.50, or \$2.00 at the gate. Accommodations at Jackson Mills are \$4.50 per day per person for lodging and three meals, and required in advance. The program will include activities for the whole family. There is a swimming pool with life guards. Reservations and more information can be obtained from the West Virginia Hamfest, Box 909, Fairmont.

• New Apparatus

Alco One-Inch Miniature Meters

THE miniature meters shown in the photograph should be "naturals" for small portable instruments, mobile gear, and transistorized equipment. Averaging only about one inch square, they come in a variety of useful ranges, and are available as d.c. microammeters, d.c. milliammeters, d.c. voltmeters (1000 ohms/volt) and a.c. voltmeters. A 0-1 ma. S meter is also included in the



line. The meter shown in the photograph is a sample of the P-1000 series, having a threaded case which is secured to the panel with the large nut. Other models (series B-100) use the conventional stud mounting. Both series have D'Arsonval movements and are equipped with zero-set adjustments. These imported meters are distributed by Alco Electronics Mfg. Co., Wolcott Ave., Lawrence, Mass.

QST

A Look Back and Ahead at PRP

BY MASON P. SOUTHWORTH,* W1VWLH

THE King is dead. Long live the King!¹ This famous phrase which portrays the continuity of royal succession can be just as well applied to ARRL's Propagation Research Project.^{1,2,3} The IGY portion of this U. S. Air Force Cambridge Research Center-sponsored program is over, but new and related phases have already begun. Now that the 1957-58 reports of v.h.f. ionospheric DX have been gathered, evaluated and transcribed onto nearly 300,000 IBM punched data cards, the time has come to really make use of this material in scientific propagation studies. Then too, as we shall see, the ham results have already justified further collection of certain logs during the International Geophysical Cooperation-1959.

First, let's check the box score on our 1957-58 PRP effort. At IGY's end there were 592 active observers sending in more-or-less regular semi-monthly reports covering their 50-, 144- and 220-Mc. accomplishments. Our mailbag would represent nearly half a DXCC — going on 50 countries — every 15 days. Consistent Reporting Award Certificates were earned by 438 stations who sent in six or more half-month, one-band logs. Most of these same amateurs then proceeded to qualify for one or more of the 973 endorsement stickers which certified to additional like feats. A perfect record of a certificate and seven stickers could only be achieved by starting off with a report for the first half of January, 1957, and sticking with it through the last of December, 1958. Nevertheless, 34 stations made such a record. We name them here as a memorial to their

outstanding work: W1HDQ, W1MMN, W1PHR, W1SUZ, W2BLV, K2DIG, K2GCU, W3GKP, W4FLW, W4HHK, W4IKK, W4UMF, W4ZZ, W6AJF, W6BWG, W7INX, W8CMS, W8EHW, W8NQD, W8OJN, W8TCO, W9ALU, W9ARN, W9FVJ, W9MFH, W0CNM, K0EMQ, W0IBL, W0MON, CO2ZX, CX1AQ, OA4C, VE3AGU, SWL-21 (Jim Pickering of Hightstown, N. J.).

Shortly after the first of this year a "thank you" letter went out over the signatures of the writer and AFCRC Project Monitor Dr. Wolfgang Pfister to all who had participated. By the time you read this most of these same amateurs will have also received an extremely handsome certificate of appreciation. This four-color document bears the names and seals of the following men and their organizations: Hugh Odishaw, Executive Director, U. S. National Committee for IGY; Col. Ernest A. Pinson, U.S.A.F., Director, Geophysics Research Directorate; and Goodwin L. Dosland, President, American Radio Relay League. A most distinguished memento of a job well done by PRPers around the world!

What About the Data?

Besides two copies each of those 300,000 punch cards referred to earlier, the processed ham data exist in the form of several sets of machine-produced listings which have been forwarded to the various IGY World Data Centers. Since these volumes will be available to scientists of all the IGY countries we have right here quite a balance of scholarly credit payable to our hobby throughout the coming years. Already, AFCRC workers under Dr. Pfister and Mr. Thomas Keneshea are well along on a study of sporadic-E based upon PRP reports. What a thrill it was for the writer to visit the Air Force's computing center and see a machine using its memorized tables of sines, cosines and tangents to figure and punch out the distances between stations on his *E_s* cards, one every couple of seconds! Another automated process has been the plotting of sporadic-E midpoints on a series of maps — one for each half-hour or so of time. By viewing these maps consecutively it is possible to visual-

* ARRL-IGY Project Supervisor.
¹ Southworth, "The ARRL-IGY Propagation Research Project," *QST*, Sept., 1956.
² Southworth, "PRP — A Progress Report," *QST*, Apr., 1957.
³ Southworth, "Another Peek at PRP," *QST*, Aug., 1958.



Printed in four colors, this imposing certificate will be a worthy adornment on many shack walls. It was awarded to all active PRPers at the close of the project.

ize (even make into a speeded-up movie) the motion of the ionized patches which provide our E_s contacts. By this means plus the study of a lot of plain old statistics about when and where sporadic-E occurs some understanding of the causes of this mode may develop. An article due to appear in *QST* within the next month or two will carry further details and preliminary results.

A second PRP study project will be getting under way this summer at Stanford University under the auspices of the AFCRC. Dr. O. G. Villard, Jr., whose several *QST* propagation articles are classics, will be the Principal Investigator, and the author will serve as Project Director while continuing his studies at the University. This program is aimed at unraveling some of the mystery behind transequatorial scatter (*TE*), a propagation mode noted for fluttery signals over long north-south trans-equatorial paths during the evening hours. Fig. 1 shows some of the *TE* paths reported by PRP observers during the IGY. Their number is the more remarkable since prior to 1957 *TE* signals had been logged only between the Americas. The availability of data for all of these circuits and information from various professional IGY experiments should make for a great deal of interesting analysis. *QST* will keep you posted on what develops.

Data Collection in 1959

As further proof of its belief in the value of amateur propagation observations the Cambridge Research Center has contracted for additional ham reports during IGC-1959. About 100 stations have been selected for the accuracy and consistency of their work and to secure a fairly even geographical distribution. They are now submitting monthly logs detailing 50-Mc. equatorial

propagation (the field judged least understood) and supplying general material about other six-meter openings. This data will be collected by ARRL and processed and studied in connection with the program at Stanford. The information should be particularly valuable because *TE* peak conditions were observed to lag maximum sunspot numbers by a year or more in the past cycle.

To help in spotting openings between the southern U. S. and South America, PRP beacon station W5FHS, Shreveport, Louisiana, which is operated by employees of the United Gas Corporation there, has obtained FCC permission to continue its 24-hour transmissions through the end of this year. A nine-element yagi has been constructed to replace the ground plane, and this is kept aimed at Buenos Aires, Argentina. Incidentally, W5FHS will send a special IGC-1959 confirmation card to any station reporting reception details.

Another *TE* warning device set up this spring was the TEW (transequatorial warning) Line. This is a network of nine stations and nine alternates which form a chain from Fort Lauderdale, Florida to Canton, Connecticut. When any TEW Line station hears South American signals after 1600 EST he telephones the stations north and/or south of him. They then check the 50-Mc. band and, if *TE* signals are heard, they pass the word along up or down the line. This way the whole U. S. east coast can be notified in a matter of minutes, but only as much of the line as is necessary is used during a given opening.

If all this makes you feel that amateur propagation studies are important and mean business, you're right! We think they also demonstrate that the day of ham contributions to the state of the art is by no means over!

QST



Fig. 1—Dashed lines illustrate some of the 50-Mc. transequatorial scatter paths worked by PRP observers during the IGY. The solid, wavy line represents the magnetic equator where the earth's magnetic field is parallel to its surface. Note how the *TE* is roughly symmetrical to this equator.

V.H.F. QSO Party Announcement

June 13-14

ANOTHER ARRL V.H.F. Party will be held from 2 P.M. local standard time Saturday, June 13, through 10 P.M. local standard time Sunday, June 14. All amateurs who can work any band or bands above 50 Mc. are urged to join the fun.

The rules are exactly as before, except that the ending time has been moved up an hour. This is to permit mountaintop portables to wrap up operations earlier, yet preserve the possibility of catching evening aurora and sporadic-E conditions late in the contest period.

Call "CQ V.H.F. QSO Party" or "CQ Contest" to raise other participants. During contact, operators must exchange names of their ARRL Sections (see page 6) to receive contest credit. Signal reports, operators' names, and equipment line-ups may also be exchanged, of course, but such information is not required by the contest rules. Figure your score as shown in rules 4 and 5.

A certificate will be awarded to the top scorer in each ARRL Section. In addition, certificate recognition will be extended to the high-scoring Novice, Technician, and multioperator station in each section from which three or more valid entries in these three special categories are received.

Submit your results as soon as the competition ends. A simple tabulation of stations and sections

worked, as shown in the accompanying sample log, is all that is required. Free log forms are now available from ARRL.

Rules

1) The contest starts at 2:00 P.M. Local Standard Time, Saturday, June 13, and ends at 10:00 P.M. Local Standard Time, Sunday, June 14. All claimed contacts must fall within this period and must be on authorized amateur frequencies above 50 Mc., using permitted modes of operation.

2) Name-of-section exchanges must be acknowledged by both operators before either may claim contact point(s). A one-way exchange, confirmed, does not count; there is no fractional breakdown of the 1-, 2- or 3-point units.

3) Fixed-, portable- or mobile-station operation under one call, from one location only, is permitted. A transmitter used to contact one or more stations may not be used subsequently under more than one other call during the contest period.

4) Scoring: 1 point for completed two-way section exchanges on 50 or 144 Mc.; 2 points for such exchanges on 220 or 420 Mc.; 3 points for such exchanges on the higher v.h.f. bands. The sum of these points will be multiplied by the number of different ARRL sections worked per band; i.e., those with which at least one point has been earned. Re-working sections on additional bands for extra section credits is permitted. Cross-band work does not count. Contacts with aircraft mobile stations cannot be counted for section multipliers.

5) A contact per band may be counted for each station worked. Example: W2TBD (S.N.J.) works W1PHR (Conn.) on 50, 144 and 220 Mc. for complete exchanges. This gives

(Continued on page 164)

SUMMARY OF CONTACTS, JUNE V.H.F. QSO PARTY

Station.....		Class License.....		ARRL Section.....					
Freq. Band (Mc.)	Date and Time	Station Worked	Section	Record of New Sections for Each Band					Contact Points Claimed
				50	144	220	420	Other	
50	June 13 2:15 P.M.	W1AQE	E. Mass.	1					1
		W1RFU	W. Mass.	2					1
		K2IEJ/2	N. Y. C.-L. I.	3					1
144	3:00	W1AQE	E. Mass.		1				1
		W1OOP	E. Mass.						1
		W1RJA	Conn.		2				1
1215	3:24	K2IEJ/2	N. Y. C.-L. I.		3				1
		W2GLU	N. Y. C.-L. I.						1
		W1VNH	W. Mass.					1	3
50	3:48	W2ADE	N. N. J.	4					1
		K2HPN	E. N. Y.	5					1
220	4:04	W1OOP	E. Mass.			1			2
		W1AQE	E. Mass.						2
		W2AOC	N. Y. C.-L. I.			2			2
50	June 14								
	8:10 A.M.	W9ROS	Ill.	6					1
	8:20	W0OFZ	Minn.	7					1
	8:43	W6NLZ	Los Angeles	8					1

Number of contacts: 50 Mc. 8 144 Mc. 5 220 Mc. 3 420 Mc. Other 1
Total contacts: 17 Total contact points: 22 Multiplier: 8 + 3 + 2 + 1 = 14
Claimed score: 22 x 14 = 308 Points Final Score

Names and calls of operators having a share in above work

I hereby state that I have abided by the rules specified for this contest and that, to the best of my knowledge, the points and score as set forth in the above summary are correct and true.

Transmitter: Signature:

Receiver: Address:

Antenna:

Publicity Corner —

Don't Be Shy About It!

BY JOE A. ROLF,* K5JOK

PUBLICITY HOUND" seems to be a pretty common term in many ham circles. So common, in fact, that anyone sending out a QSL with even a remote resemblance of his beautiful mug is liable to earn the title. However, the unlaudable description falls much quicker upon the local ham whose call is presented over mass media. Amateur radio seemingly has retreated to the confines of a few precariously held kilocycles, and anyone departing from the bedlam to do a little bragging has a pretty good chance of being plastered with the publicity sticker. Hams have become, of all possible things, publicity shy!

This charge may be challenged as being untrue and unwarranted, but one has only to do a little rag-chewing to find that he isn't the only one to be misunderstood by neighbors, police, Congressmen, mayors, dog catchers, welfare officers, and XYLs. Nor does one have to conduct an extensive survey outside the circle of immediate acquaintances to determine what his community knows about ham radio.

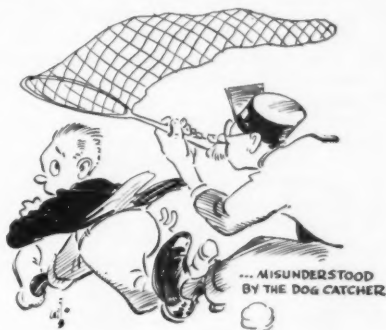
For instance, it is well known publicly that the hobby sometimes provides emergency communications during disaster (a fact often quickly forgotten with a little sunshine); that hams meet in nets to prepare for such emergencies (though nothing ever seems to come from these apparent social gatherings); and that they occasionally have success in sending garbled messages to such remote places as the North Pole. More often, the average ham is known as the arch-villain, by popular vote, of Channels 1 through 28; a joker who enjoys living dangerously in a junked-up basement, with the spider agility to cover a nice neighborhood with wire in nothing flat. During sunspot cycles, he is even known to become vicious, shouting at everybody's kids and leaving his wife.

Whether the above assertions are true or not, even to the belief of solar lunacy, they are typical negative attitudes existing in many localities.

* Box 594, Jonesboro, Arkansas.

They exist, mainly because the real cause of ham radio has not been made sufficiently clear. For the same reason, the really significant aspects of the hobby are seldom known.

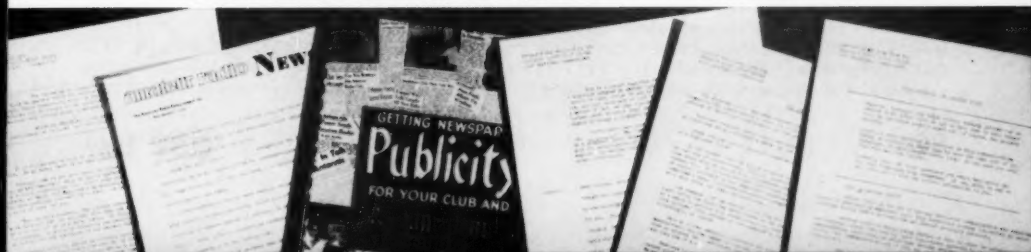
Today, ham radio's vastly improved technology and ability to render a superior public service doesn't often demand the limelight of the front pages, or the attention of a learned scientific



convention, as in the Golden Age before Pearl Harbor. The almost hidden role of modern amateur radio, now reaching through the ionosphere, is not so widely publicized as in the days when the hobby was reaching for Europe. This does not mean that national publicity is nonexistent, or fails to meet a definite need, but that the real burden of publicity at the local level has fallen upon the individual.

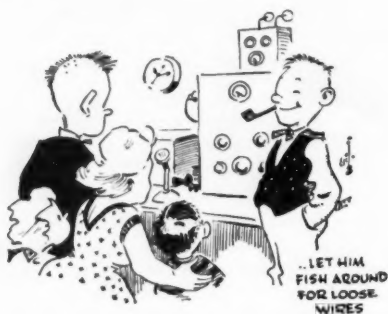
And why you? For one reason, you're a ham. For another, you're not the same kind of ham as the fellow out on the coast who won the Such-And-Such Award last year. Everybody read about his work during Hurricane Elmira and everybody was impressed. You felt good, yourself, when you read about it. The hero was a fellow hobbyist, and you understood his problems. It

When you get your own public-relations program off the ground, you may want to use some of the publicity aids available from League headquarters free of charge. Shown here, from the left, are the sample speech, good for either fifteen or thirty minutes at a meeting of a civic club, church group, youth organization or the like; news-release paper, 8½ by 14 inches, to give your own releases a professional appearance; the publicity booklet for clubs, containing five pages of general instructions and forty sample releases to be adapted to your own local use; a script for a fifteen-minute radio broadcast; the television interference script which, with its accompanying slides, shows viewers what causes interference and how it can be corrected; and the "Interview On Amateur Radio," especially useful to educate newsmen and feature writers on our hobby. Other aids include reprints of newspaper TVI stories, reprints of "glamour" articles on ham radio, and two movies on emergency radio operations. Requests for this material can be directed to ARRL Hq.



could have been you . . . sitting there in the darkness, fighting fatigue, hoping the long wire would hold during the 90 m.p.h. gale. You can picture our hero struggling, as you would have done, to pass his last bit of traffic before the water-cooled 6V6 disintegrated. This fellow, like you, is a credit to the hobby and everyone ought to love him and ham radio too.

Everyone does love him, but he's one in a thousand and you aren't even in the thousand that produced him. Not at all. Not with your rosy 813, beat up receiver, and antenna that's uprooting your neighbor's favorite sycamore. Besides, you're a scandal to the community when your rotor gets stuck. The other fellow never used such language (so the public thinks). He had new equipment, sat in an air conditioned office . . . even wore a grey flannel suit. The other fellow's achievement hasn't elevated you one kilocycle in the eyes of the public living within a second harmonic's throw. They know you and, like many of us, you may be pegged a real dirty-bird ham.



What to do about it? Either prop up the sycamore and make a mad dash before the grey flannel market takes an upward spiral—or become a publicity hound. You don't have to be a big one; in fact, there is as much harm in being too publicity conscious as there is in not being publicity conscious at all. The important thing to remember is that ham radio is an important service to any community and that it's not illegal, though a lot of people think it is. Let the facts be known. Don't whisper, speak up!

Publicity can be grouped, like anything else, into two categories—good and bad. Both are easy to come by, but good publicity can only come about by being a good ham and letting the good points come to light at the right time, by knowing something about the hobby and telling people about what you know.

It's hardly likely, for example, that any good publicity can come from a rig which tears up every TV within four blocks. But then, even good hams with good rigs have some trouble. If the mess can't be cleaned up, there should at least be an attempt at compromise. Many hams don't compromise, but consider the FCC as a complaint department for all misdemeanors.

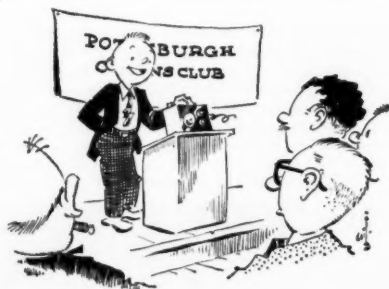
It's the easy way out—that is, until the Commission receives so many complaints it decides to allocate only the infra-red region for amateur use. The problem which can't be solved with a solder-iron is best solved first hand, rather than by letting the government try it through the mail. People aren't too hard to handle. Recent *Handbooks* have complete sections dealing with both technical and public-relations aspects of TVI. This material is easy to find too . . . it's the section with no grimy finger-prints or dog-eared pages.

Then too, there's small chance of becoming a full-fledged publicity hound if the rig won't stay on the air long enough to work the fellow across the street, let alone winning this year's Such-And-Such Award. And even if the rig does stay on longer, rag-chewing doesn't make as good publicity as the c.d. nets, traffic, instruction classes, and "Worked All —" certificates we have to brag about. Believe it or not, these ham activities are newsworthy, particularly in small communities where many papers have as much trouble collecting local news as we do collecting a new state on 220 Mc. Intelligent publicity releases can really put the spotlight on ham radio, and you too for a change.

Whether a person is a full-time, part-time, or occasional ham, he should know something about the hobby and what's going on in it; he should also communicate this information to the public. This does not require a degree in electronic engineering, or the oratorical powers of Daniel Webster; it does, however, require initiative.

Three years ago a druggist mentioned his ham activities to a lady customer and within a week had an invitation to speak on the subject at the local luncheon club. Such was the interest that he has been giving lectures at the club every month since. He has not only won the reputation of being a local expert on ham radio, but also on Soviet industry, psycho-neurotic disturbances, and medieval geography. He has spoken on "Life on the Gobi", passed out ham literature like a magazine salesman at a hamfest, and probably has an honorary membership by now.

Despite the prospect of free lunches, lecturing probably is impractical for most hams. It does illustrate the fact, however, that the public is interested in the hobby and in what the average



ham has to say about it. Mention ham radio in conversation and there'll be three or four questions waiting for you. Answer them and everyone will gain.

How will everyone gain by being less shy? First, you stand the greatest chance to benefit. The fellow two doors down will be less likely to yell like murder when you put an occasional flutter on his TV with the kilowatt full-sail on ten. He'll probably be amazed that the harmonics haven't wilted his Yagi when he knows what you're doing and what you're doing it with. In fact, it wouldn't be a bad idea to let the fellow inspect the rig, even fish around in the innards

for loose wires if he wants to. Tell him about the nets you meet, the traffic you handle, the DX you've hooked and you'll no longer be the community crackpot — even though you *are* a publicity hound.

Respecting the entire hobby, there have been ominous forecasts (particularly, in the recent requiems for eleven meters) of dogdays ahead for ham radio. This may well be so, unless amateur radio convinces the public that it is an active and necessary public utility, which it is. To be convinced the public must be told and the individual ham can best tell the facts honestly. You're a ham . . . don't be shy about it. QST

Are Your Public Relations Showing?

BY JESS WHEATON,* W9PDK

GOVERNMENT and business have long realized the necessity of a good public relations program to gain greater public support. Your club . . . all radio amateurs . . . and you . . . need the support of your community, state and nation. And more so today than ever before.

Are you experiencing difficulty in getting the local populace to understand the ham's side of things? In many communities, folks simply don't know of the activities amateurs conduct in the public interest, or anything else about the hobby — except perhaps TVI and unsightly towers and poles marring the landscape. They are not aware of anything constructive about radio amateurs.

What to do about it? Well, what is your club doing? What are *you* doing?

Club activity increasing? Plans for an all-out effort on Field Day? Emergency communications for the community and a RACES setup? Special club contests, code and theory training courses?

And now the loaded questions: Who knows about it? All of the local hams? Are you sure — *all* of them? How about the community itself? Your own neighbors? Remember — *good public relations start with the individual.*

An excellent project which can catch public interest, and which can reach out to a number of people directly, is a special traffic-handling program for members of National Guard or reserve units on summer training encampments. Some sites are too close to the home community but many are a considerable distance away and suitable for "Operation Camptraffic," a project to handle messages between these men and their families.

The fellows write home. Sure they do, when they get around to it. However, the service you can provide will bring thanks and a new community realization of the importance of amateur radio today.

To get your project rolling, contact the local unit commander, and he can contact your State

Adjutant General for you. Explain your project and don't forget to place proper emphasis on its strong morale and public relations factor for the unit. You may know of some local ham who belongs to the unit. If there is none, assistance in the project can probably be obtained through the main organization to which your local unit is attached. You can get help in establishing the workers in the project, the facilities available, schedules, frequencies, etc. Communications facilities in the form of radio equipment is always present, and many of the hams bring their own equipment with them to camp.

In your detail planning, it is suggested that a direct "camp to community" link be used. Don't hesitate to use early morning, morning, and afternoon hours. Make it easy to have operators available for the scheduled times. You will also find these hours will have less QRM and the traffic handling will be easier. The use of current state net frequencies will, in many cases, bog down due to the traffic handled and the QRM experienced. Coordination and proper planning beforehand will erase any great difficulties for you.

Now the public relations pitch: About two weeks prior to the unit's departure plan a joint unit-amateur group press release of the operation. Do not underestimate the value of photographs of the persons involved, equipment, and planning activity. During the encampment obtain photos of the men at camp writing messages, and the hams at both ends handling the traffic. News items, features of human interest events, emergencies, etc., should be channeled to the news media at all times.

Upon completion of the project, release details on the work accomplished, those who participated, and any commendations received by the military for the service to their men and their families. The impact of your local and a nationwide "Operation Camptraffic" cannot be overestimated in the valuable public support amateur radio would receive. QST

*42 Maple Ave., Superior, Wisconsin.

25th ARRL Sweepstakes Results

Part II — Phone and Club Totals

PART I of the 1958 ARRL Sweepstakes results (May QST) recounted the considerable accomplishments of the c.w. specialists. This month we're pleased to report the upsurge in phone participation and the club competition, and publish photos of the fellows who helped make this 25th SS better and bigger than ever.

Phone entries were submitted by 706 in 71 sections, this reflecting a 13.3% rise in activity over 1957. Any way you figure that turns out to be a lot of voice power.

Top over-all score was posted by K6EVR, passing all Los Angeles Section and Southwestern Division comers (phone or c.w.) with a fifty 212,321 points. Still out that way, 'though up north in East Bay, W6PQW remained on 10 for a total of 960 QSOs and second place, never straying from his chosen band. K5MDX of Mississippi made third national high with 821 contacts.

Here's a quick rundown on licensing area leaders:

W1EKO.....122,040	VE2AZI.....45,266
K2BHP.....106,088	VE3DRL.....11,280
W3ECR.....107,967	VE5FN.....26,871
K4SXO.....137,423	VE6TP.....54,251
K5MDX.....179,690	VE7CE.....53,213
K6EVR.....212,321	VE8FO.....27,094
W7BSW.....142,350	KL7CKB.....25,493
W8AJW.....134,136	KH6JJ.....31,578
K9ALP.....142,350	KZ5GT.....55,543
W0CYT.....132,057	CO3HD.....7,410
K8LTZ/VOL.....22,343	

For many ops, working all sections is more than half the fun of the race. Specialists in this department were K1CTD, W3ECR, K4s IEX SXO, W5s DQK ZHI, K5MDX, W6KG, K6EVR, W7BSW, W9s DUP FBP NZM, K9s ALP ATZ CLO, W0s CYT PRZ. Hearts were saddened for these, though, when the final tally came out one section short: W1s EKO KBN, W5s IWL LDH, W6LNU, W8AJW, K8KLI, W9VZP.

Club Scores

The Frankford Radio Club did it again! Extra persuasion (or something) helped coax almost one million additional points from the same number of participants as last time. Their Delaware trio alone (W3s DRD GAU IYE) handed out about 2800 Diamond State QSOs. With a tight grasp on another engraved gavel, Frankford plans to keep up this intense type of club competition until "something gives!"

Potomac Valley Radio Club, 600 thousand points out of first, upped its aggregate score by more than a million points over the 1957 figures. Average score rose to almost 100,000 points per entry.

New to the show position, and getting better steadily, was the Milwaukee Radio Amateurs'

Club. To 4th place went the fast-climbing Sioux City Amateur Radio Association of Iowa, all the way from 14th. Nice going!

Other noteworthy gains: Richmond (Va.) Amateur Radio Club, 23rd to 11th; Ohio's Buckeye Shortwave Radio Association, 18th to 13th; the Connecticut Wireless Association, 28th to 16th; and a fine leap by the Canton (Ohio) Amateur Radio Club from 58th to 18th place.

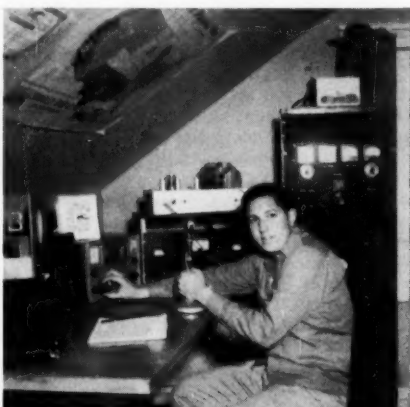
To see how your own club stacks up, check the accompanying box of 99 qualifying clubs. Certificates are scheduled to go to section and club winners this month. Please stand by.

The second quarter century of the Sweepstakes comes up November 7-8 and 14-15. Let's hear you!

— E. W.

Soapbox

"If those Technicians on six had been SSers I'd have made a million." — W3ECR. . . "Planned to triple last year's score but ended up matching it in one-third of the operating time." — K4LNQ. . . "The boys really must have needed Utah. I felt like rare DX!" — W7DTB. . . "This was my first SS and although my tales of woe would fill many volumes I did reach my goal of 250 contacts and finished WAS." — K6MOD. . . "Wonder how that W6 station got up to number 58 just fourteen minutes after the fracas started?" — K5MID. . . "We were fortunate enough to work 71 sections during the first sixteen hours." — W9YDX. . . "Heavy QRM made 40 and 20 almost useless." — K6ICS. . . "My first SS and I had a ball. In spite of QRM, TVI and QRP, I enjoyed every minute of it." — K7BHE. . . "Heard one OM calling 'CQ rat race' but what do you call it when two high-scoring power houses get on the same band, same frequency and the same time with calls like K6EVR and K6ERV?" — W5IWL. . . "Made a mistake going on phone in my first try Next year it's QRP c.w. for me." — W2REH. . . "My first phone try and I was amazed at the number of returns on first calls." — K4EX. . . "My thanks to those who



In his successful race for the Mississippi award, K5MDX placed third in the national comparisons. Since acquiring General Class license in 1958, Dave has worked 153 countries on phone. This kind of operating ability helps roll up contest QSOs; witness 821 of them in this SS competition. Grand total: 179,690 points. Age: 15.

helped me roll up a pretty respectable mobile score." — **W9JQE/9**. . . "This year, for the first time, we operated as a husband-wife team for a full 40 hours. We were pleased to work all 73 sections but surprised that VE3, normally an easy section, was the last one worked." — **W6KG**. . . "It sure would make QSLs easier to do if the number of the QSO would appear on all incoming cards." — **W6MYI**. . . "Sorry I missed Santa Barbara for my 73rd." — **W1EKO**. . . "The high point in the contest was a QSO with VESMC who wasn't participating. It took the contest to get me there at the right time." — **W1EIB**. . . "The old Viking I with the same tube in the final won for me five years in a row. In this attempt for 6 consecutive awards (successful!) my sturdy companion put forth its best effort to date." — **W7OVA**. . . "I spent my time section hunting and averaged .54 sections per contact." — **W8OMY**. . . "Last year I said wait 'til next year and then I went and took a Sunday job. Oh well, just wait until 1959!" — **K2TSW**. . . "Where do the Vermont and Mississippi stations go during the SS?" — **W7BLX**. . . "My first attempt at running up a high score and enjoyed the contest as usual. However it sure takes a lot out of you to pursue the SS for the full course. Worked Vermont for the 72nd section, last state, and 475th contact. As soon as WIBKZ acknowledged my preamble, I pulled the cork and called it quits." — **K8KLI**. . . "Whew! Now I know what it's all about!" — **K6YLD**. . . "Never heard a KP4, KL7 or KH6 at this Oklahoma QTH." — **K5BBA**. . . "Ten meters was in great shape." — **K6QHE**. . . "I got a scare at the start of things as the power went off and didn't come on until two minutes before the contest began. Boy what bedlam!" — **K4SXO**. . . "Nothing from the antenna down to the receiver and back through the transmitter worked right." — **K0JJP**. . . "My second year in the SS and doubled my previous years score." — **K2MDL**. . . "More power plus more time equalled lots more fun, but 50 watts on 75 and 40 can be pretty rough." — **W1HAM**. . . "My first SS and the only complaint I have is that K6EVR also worked the contest. During the 2nd week end I had to play with the fellows to give me a contact. They thought they had already worked me when it was actually K6EVR they had contacted. And, of course, he must have worked everybody. Do you suppose FCC could make an exception to their rules and give out different call letters in a hardship case like this?" — **K6ERV**. . . "Glad to see all the Wyoming activity." — **K5EDM**. . . "I'd like to compliment the great majority of W/K stations on their courtesy and patience when working the relatively rare VE5 section." — **VE5FN**. . . "Tried to make it all sections worked with the least number of contacts but wound up with 73 QSOs in 63 sections." — **W4KMS**. . . "Mobiling is a pretty inefficient way to get a signal on the air especially for a sustained time. I burned a full tank of gas in operating 18½ hours and had to shut down several times to allow rig, car and operator to cool off. It was warm in So. Texas that first week end!" — **K5HAL/5**. . . "Considering all the situations I still had a wonderful time and wonder why I spent the first 25 years of my ham existence wondering why anyone would bother to work the SS." — **W1DIS**. . . "Tried low power this year and found contacts much harder to get with end results about the same." — **W9NZM**. . . "Missed Santa Barbara for the second year in a row but doubled my score." — **K1BEB**. . . "Bands crowded and skip funny in Washington Section. Pleased to hear K8KLI answer my 'CQ W. Virginia' after I had given up on working all 73. After that I regained enough strength to work a few more." — **W7BSW**. . . "Everything worked fine, not one bit of trouble this year. Those tips from W9IOP (September, 1958 QST) work equally well on phone." — **K9ALP**. . . "This year I remembered to operate the second week end." — **W1DGI**. . . "My Santa Barbara location seemed like DX. Sometimes there were 8 or 10 stations calling me at the same time." — **K6SDE**. . . "Both week ends everything went wrong but I would still like to express my thanks to all who helped." — **K1DWQ**. . . "My wife gets a big laugh out of my present rabid pursuit of the SS. She remembers those years when I used to complain of the messed-up bands on contest week ends. As I like to point out, if you can't lick 'em, join 'em." — **K4ZGM**. . . "This being my second SS and being just 17 I feel I still have a lot to learn. However, I'm quite proud of my 75,888 points as it was achieved with a maximum of 55 watts input. Bettered my last year's



Glendale College student K6EVR broke the bank and established a new mark of achievement in the phone SS. This Los Angeles leader began hamming in 1954 and, besides setting contest records, has skyrocketed to DXCC 264/253. It's going to take a powerful lot of lung power to beat Ron's 1958 success: 976 exchanges in all sections for 212,321 points!

score by 63,684 points. Boy, what a difference a beam can make!" — **K4JCC**. . . "Got the 'flu the second week end, beginner's luck." — **W9YEJ**. . . "Some day I'm going to have the time, luck and temperament to get all sections." — **W0VIP**. . . "The most frustrating moments were spent hearing VE1s, and VE2s in QSO and not being able to break through for my last two sections." — **W0BWJ**. . . "Only operated a fraction of the allotted time due to a football game (I'm in the high school band) at our own stadium one week end and 100 miles away in Tallahassee the other week end." — **K4CEF**. . . "My most enjoyable SS to date, mostly attributed to my better signals with the quad. The adjacent sections are the hard ones. Where were the VEs?" — **W5INL**. . . "Worked quite a few new states." — **K4RSY**.

PHONE SCORES

Twenty-Fifth Sweepstakes Contest

Scores are grouped by Divisions and Sections. . . The operator of the station first-listed in each Section is award winner for that Section unless otherwise indicated. . . Likewise the "power factor" used in computing points in each score is indicated by the letter A or B. . . A indicates power up to and including 150 watts (multiplier of 1.5, phone). B over 150 watts (multiplier of 1). . . The total operating time to the nearest hour, when given for each station, is the last figure following the score. . . Example of listings: W3ECR . . . 107,967-493-73-A-28, or, final score 107,967, number of stations 493, number of sections 73, power factor of 1.5, total operating time 28 hours. . . Multioperator stations are grouped in order of score following single-operator station listings in each section tabulation.

ATLANTIC DIVISION

Eastern Pennsylvania

W3ECR	107,967-493-73-A-28	K3AZI	5468-	70-27-A-25
K3ALU	74,685-383-65-A-37	W3DYL	5440-	85-32-B-7
W3URU	63,000-300-70-A-36	K3ASH	5400-	109-25-B-17
W3SEB	46,575-225-69-A-28	W3PNL	4125-	56-25-A-5
W3ORU	35,700-300-60-B-19	W3HLZ	3480-	58-20-A-4
W3DHM	33,807-191-59-A-4	W3FOA	3267-	61-18-A-11
W3ZJD	31,980-205-52-A-30	K3BPL	3267-	50-22-A-7
W3BFM	31,800-204-53-A-23	W3IIO	2739-	42-22-A-7
W3QEZ	23,715-155-51-A-25	W3JLI	2268-	42-18-A-11
W3ZNV	22,149-161-46-A-17	K3BFW	1824-	32-19-A-2
W3RAE	19,680-160-41-A-23	W3UOJ	1530-	51-10-A-12
K3DVS	18,060-141-43-A-23	W3PWC	1440-	40-12-A-14
W3MQC	17,760-160-37-A-	W3KAG	1305-	29-15-A-8
W3KIG	16,884-135-42-A-17	W3CMD	1248-	26-16-A-2
W3EBC	14,520-110-44-A-	W3JRY	1188-	66-6-A-19
W3TMC	13,179-96-46-A-21	W3BRU	1092-	52-7-A-30
K3RKT	11,625-125-31-A-14	W3YLL	1008-	21-16-A-2
W3YEA	11,211-101-37-A-10	W3CNO	900-	20-15-A-1
W3PSZ	10,800-100-36-A-20	W3GCT	570-	19-10-A-3
W3HGZ	7872-82-32-A-11	W3ODY	180-	20-3-A-7
W3GSC	6288-66-32-A-11	K3DNL	128-	9-6-A-5
W3JZB	5565-53-35-A-7	W3BNR	75-	5-5-A-1
		W3EAN	75-	5-A-1
		W3HUR	24-	4-3-B-1
		K3CNF (K3e CNF ET T)	3588-	54-23-A-7

Md.-Del.-D. C.		Southern New Jersey		Western New York			
W3AZD	66,625-375-61-A-39	K2MPB	89,892-450-66-A-38	K2BHP	106,088-51-68-A-40	W2EWO	4230-47-30-A-5
W3IBX	22,545-141-35-A-17	K2ZZT	14,648-141-35-A-17	W2VIX	82,926-40-68-A-37	W2TMS	1284-32-20-B-5
W3AYD	17,564-160-56-B-16	W2ILN	9600-80-40-A-6	W2ZSF	34,968-34-20-B-10	W2WV	1284-32-20-B-5
W3PKC	14,768-142-52-B-24	W2DMR	8880-111-40-B-12	K2ABE	32,310-181-60-A-37	K2WTF	270-10-9-A-1
W3MTU	13,320-120-37-A-10	W2ESG	7193-70-35-A-7	K2YJN	21,465-135-53-A-8	K2MTW	48-4-4-A-1
K3BYR	7038-69-34-A-7	K2BZK/2	6399-79-27-A-10	W2RTR	20,849-34-20-B-10	K2LCL	(K2LCL) 26,216-227-58-B-26
K3CCY	1525-31-25-B-7	K2EY	6336-66-32-A-24	K2SQX	16,830-110-51-A-22	Western Pennsylvania	
W0BP0/3	726-22-11-A-5	K2DEL/2	6216-74-28-A-7	K2TNY	13,254-98-47-A-9	W3LAW	47,190-286-55-A-35
W3GCF (W1ZHC)	BOQ	W2ACNB	3213-54-21-A-7	K2MAF	9660-34-20-B-10	W3LAW	47,190-286-55-A-35
YL, K3ATU	W0BP0	W18Z	1607-71-30-A-6	W2QCI	6390-71-30-A-6	W3ABW	39,133-211-62-A-29

Western Pennsylvania		W3LWW	
W3LWW	47,192	286-55-A-35	
K3ARP	42-03	223-63-A-38	
W3ABW	39,153	211-62-A-29	

CLUB SCORES

Club	Score	C.W. Winner	Phone Winner
Frankford Radio Club	5,966,485	W3JNQ	W3ECR
Potomac Valley Radio Club	5,345,727	W4KFP	
Milwaukee Radio Amateurs Club	1,586,739	K9CAN	K9CJX
Sioux City Amateur Radio Assn. (Iowa)	1,223,402	W0FZO	W0ANE
Ohio Valley Amateur Radio Assn.	1,167,908	W8LQA	
Hamfeters Radio Club (Ill.)	1,120,639	W0IRH	K9EED
Ed-Ray Radio Club (Mass.)	1,054,328	K1CQO	W1OTH
South Jersey Radio Assn.	784,783	W2EZH	K2UQD
Chicago Suburban Radio Assn.	674,452	W9ZRX	W0HFC
Westpark Radios (Ohio)	673,995	W8YPT	W8AJW
Richmond Amateur Radio Club (Va.)	626,414	W4BZE	K4HUU
Garden State Amateur Radio Assn. (N. J.)	621,962	W2CQK	
Buckeye Shortwave Radio Assn. (Ohio)	617,683	W8OYI	
Tri-County Radio Assn. (N. J.)	559,883	W2EBG	
Suffolk County Radio Club (N. Y.)	554,452	W2PZE	W2JFU
Connecticut Wireless Assn.	519,019	W1BHH	
Order of Billed Owls (N. Y.)	506,073	W24YJ	
Canton Amateur Radio Club (Ohio)	495,530	W8NWR	W8IKM
Denver Radio Club	468,610	W0ANA	W0CYT
Wisconsin Valley Radio Assn.	468,585	W9RQM	
Montrose County Amateur Radio Club (Colo.)	445,853	W0WMT	K9EGJ
Bronx High School of Science Radio Club	445,376	K2IAD	K2QDD
South Lyme Beer, Chowder & Propagation Society (Conn.)	395,833	W1LAV	
West Seattle Amateur Radio Club	390,869	W7YCN	W7IKK
Narragansett Assn. of Amateur Radio Operators (R. I.)	381,142	W1CJH	
Hughes Amateur Radio Club (Cal.)	380,174	K6VTU	
San Diego DX Club	376,383	W0ZVQ	
South Miami DX Club	372,098	K7BQK	K4SKX
Lake Success Radio Club (N. Y.)	359,830	W2CWD	K2DZU
Central Michigan Amateur Radio Club	353,971	W8TJD	
Westside Amateur Radio Club (La.)	344,106	W5BUK	W5INL
Radio Amateurs of Greater Syracuse	343,040	W2C8J	
Atlanta Radio Club	336,366	W4HBO	
Four Lakes Amateur Radio Club (Wis.)	311,326		
Niagara Radio Club (N. Y.)	306,927	K2MWM	
Starved Rock Radio Club (Ill.)	306,275	W9ABV	W0LIG
North Penn Amateur Radio Club	291,310	W3BUR	W3URU
Columbus Amateur Radio Assn.	276,406	W8DWP	W8VOW/S
SWAN Amateur Radio Club (Ill.-Wis.)	269,823		W0DUU
Joliet Township H. S. & Jr. College Radio Club (Ill.)	260,390	W0YYG	W9ATZ
Short Skip Radio Club (Pa.)	254,356	W2ILN	W3ZJD
Theco Radio Club (Ohio)	251,020	K8CJD	W8BIM
Watchung Valley Radio Club (N. J.)	250,756	K2YJH	W2LOP
West Suburban YMCA Amateur Radio Council (Ill.)	240,069	K9IND	K9MPC
Mumford High School Radio Club (Mich.)	238,655		K8CPM
Santa Fe Radio Club	232,824		W5MYI
Dade Radio Club (Fla.)	215,175		W4ZPO
Huron Valley Amateur Radio Assn. (Mich.)	205,486	K8ICZ	
Citrus Belt Amateur Radio Club (Cal.)	204,373	K6GLA	
Milwaukee School of Engineering Amateur Radio Club	202,882	K9VCH	
Montachusett Amateur Radio Club (Mass.)	193,991	W1DZV	
Oxford Circle Radio Club (Pa.)	187,794	K3ALD	K3ALU
Kankakee Area Radio Society (Ill.)	186,231	W9KLD	
Karkfield Amateur Radio Club (N. Y.)	172,208	W2W0V	K2JHW
Syracuse V.H.F. Club	167,749	W2EMW	
Springfield Amateur Radio Club (Ohio)	166,794	W8LVH	
St. Louis University Amateur Radio Club	154,037	K8CJD	W9ETV
Waupaca Amateur Radio Club (Wis.)	144,599	W9KXK	
Beachwood Amateur Radio Klub (Cal.)	134,866		K6DDO
Hopkins Amateur Radio Club (Md.)	132,062		
Amateur Radio Society of CCNY	107,531	K2IYC	
William Penn Radio Club (Pa.)	124,970	W3DAO	
Middlesex Amateur Radio Club (Mass.)	117,226		
Jamestown Amateur Radio Club (N. Dak.)	114,757		
Amateur Radio Club of University of Arkansas	107,531	K5GRT	K5JPB
Wheatley Amateur Radio Club (N. Y.)	105,971		
Mamaroneck High School Radio Club (N. Y.)	103,788	K2TIV	
Detroit Amateur Radio Assn.	102,603	W8GEB	
Five Towns Radio Club (N. Y.)	100,143		K2TAP
BAC'RAI Radio Club (Mich.)	99,240	W8GB	
Mohawk Amateur Radio Club (N. Y.)	97,009		W2WPH
Atlanta Teenage Amateur Radio Club	96,033	K4EEK	
Norquabont Amateur Radio Assn.	94,783	VE2ADD	
Philadelphia Wireless Assn.	94,125	W3NHX	
Fenwick High School Radio Club (Ill.)	93,919	K9HCP	
Schenectady Amateur Radio Assn.	82,116	K2JEX	
Chicago Radio Traffic Assn.	76,573	W9REC	
Oak Park Amateur Radio Club (Mich.)	78,023		
Raritan Bay Radio Amateurs (N. J.)	73,968	W2CVW	
South Bay Amateur Radio Society (Cal.)	71,108	K6BGC	
Radio Amateur Megayevle Society (Ill.)	67,326	W9PCQ	
Albany Park Amateur Radio Club (Ill.)	66,293	K9IRP	
Forest City Amateur Radio Club (Ohio)	64,315	W8SJT	W8UXP
Hunter College Amateur Radio Society (N. Y.)	62,190	K2LTI	
Jasper High School Radio Club (Texas)	58,738		
Dayton Amateur Radio Assn.	54,841	K8B8M	
Explorer Post 599 B.S.A. (Ga.)	52,158	K2ZAI	
Pelham Memorial High School Radio Club (N. Y.)	41,566	K8BEP	
Hamilton High School Radio Club (Cal.)	38,523	W2JBQ	
Mid-Inland Radio Club (N. Y.)	38,130	W2TJD	
Sutley Amateur Radio Society (N. J.)	29,600	K2LXU	
Woodlawn Radio Club (N. Y.)	25,323		
Rochester Amateur Radio Assn.	25,321	W0VPD	
Central Illinois Radio Club	22,998	K2BTB	
South Side High School Radio Club (N. Y.)	16,092		W9OQI
The Communicators (Ill.)	14,757		
Mira Costa High School Amateur Radio Club (Cal.)	12,423	K6YNB	K1BXV
Middlebury Mike & Key Club (Vt.)	10,772	W1ETH	K1ACJ
Brookline High School Amateur Radio Club (Mass.)	7432		

1 W0FVD, op. 2 K2JVB, op.

W3ROA... 37,436-213-59-A-30
W3KTW... 27,284-173-53-A-14
W3CMN... 26,052-171-52-A-19
W3CTN... 17,493-172-51-B-16
W3KRBZ... 10,343-103-35-A-10
W3BWI... 8,841-85-29-A-12
W3DME... 8,863-83-25-A-8
W3BPU... 15,400-55-14-B-18
W3APR... 201-17-4-A-14

CENTRAL DIVISION

Illinois
K9ATZ... 116,070-530-73-A-
K9BGL... 92,466-467-66-A-40
W9NZM... 89,681-414-73-A-34
K9LED... 74,844-378-66-A-38
W9HKE... 70,914-342-69-A-35
W9LIG... 62,832-308-68-A-33
W9FVU... 59,430-283-70-A-24
W9LQF... 57,519-291-66-A-27
W9KMN... 55,185-283-65-A-23
W9ORH... 54,340-283-64-A-26
W9WQG... 45,567-250-61-A-27
W9PNY... 44,694-257-63-A-34
W9PNE... 36,735-204-62-A-24
W9RHV... 36,036-231-52-A-37
W9ZUV... 27,018-160-57-A-19
K9MPC... 26,622-177-51-A-38
W9VIG... 23,322-169-46-A-18
W9KRL... 23,184-185-42-A-22
W9PVE... 16,974-138-41-A-18
K9IDEQ... 16,611-13-49-A-20
W9PHZ... 15,429-139-37-A-19
W9QWM... 13,440-113-40-A-12
W9QKJ... 13,200-111-40-A-17
K9FAZ... 12,543-115-37-A-7
K9BPT... 11,016-108-34-A-26
W9VQC... 10,032-88-38-A-15
K9KHZ... 8,648-72-49-A-7
W9AJC... 8,580-110-26-A-29
K9IEK... 7,770-74-35-A-7
W9PCB... 7,398-72-36-A-7
W9JIT... 7,339-88-28-A-11
W9JMY... 6,930-70-33-A-8
W9PNH... 6,650-72-31-A-11
W9NZS... 5,400-60-30-A-13
K9MHD... 5,304-70-36-A-14
K9JAW... 4,984-89-28-B-13
W9MZX... 4,002-69-29-B-11
K9KAR... 3,564-44-27-A-4
W9ATU... 2,970-33-22-A-6
W9MAT... 2,178-33-22-A-6
W9TCA... 2,160-48-15-A-7
W9ZYL... 2,000-30-30-B-7
K9FEA... 1,900-35-18-A-3
K9JEA... 1,890-35-18-A-3
K9JPR... 1,620-30-18-A-3
W9JMF... 1,060-23-16-A-3
K9JVD... 1,080-24-15-A-3
W9PVP... 960-24-20-B-3
W9JDT... 903-22-14-A-4
K9KRJ... 819-27-15-B-10
W9CZP... 747-43-9-B-4
W9TCD... 576-24-8-A-4
W9TLC... 460-17-37-B-10
W9HVH... 360-12-10-A-3
K9JMA... 360-12-10-A-3
K9JMF... 324-12-9-A-1
W9JWS... 310-10-9-A-1
W9PKJ... 270-10-9-A-1
W9HKA... 252-14-9-B-3
W9JYV... 216-9-8-A-3
K9HMY... 210-7-2-A-1
W9YVF... 75-5-1-A-1
W9NUI... 54-9-2-A-1
W9BIX... 48-8-2-A-1
W9YVG... 12-2-2-A-1
W9WAV... 3-1-1-A-1
W9FBP (W9B FBP YDX)
57,162-609-73-B-39
K9KDI (K9B KDI KIC)
43,365-245-59-A-21
W9AA/9 (K9B AND CYU)
4752-67-24-A-9

Indiana
K9CLO... 77,380-530-73-B-33
W9QAX... 57,525-325-59-A-35
W3LNV... 20,130-137-49-A-13
W9UEM... 19,608-525-43-A-20
W9LKI... 13,932-109-43-A-18
W9EBB... 10,206-123-42-B-21
W9DGA... 6,549-59-37-A-4
K9ELE... 6,510-70-31-A-8
W9TRQ... 3,000-40-25-A-17
W9BPU... 1020-30-17-B-6
W9EPI (W9B EPI INI)
9072-109-42-B-33

Wisconsin
K9ALP... 142,350-630-73-A-36
W9IDU... 102,164-471-73-A-40
W9ZSO... 91,563-668-69-B-39
W9VZV... 87,264-404-72-A-40
K9JJK... 76,300-375-69-A-38
K9EVB... 46,800-240-65-A-29
W9ECC... 38,912-304-64-B-17
K9GOQ... 37,515-317-61-B-23
W9RZL... 34,770-190-61-A-26
W9ZBF... 32,764-216-35-A-15
W9VQG... 30,807-163-63-A-26
W9CJO... 26,334-162-37-A-25
W9SFK... 26,160-214-69-B-25
W9JQE/9... 23,550-155-53-A-34
W9SAA... 13,803-107-43-A-12
W9PQA... 11,682-89-44-A-9

W9ZPJ... 10,260-90-38-A-15
W9VFX... 743-86-29-A-14
W9RZD... 7295-84-29-A-7
W9DOS... 7008-73-32-A-14
K9MZM... 6954-61-38-A-7
K9BEL... 6102-72-27-A-9
W9GPI... 5394-58-31-A-8
K9KGF... 4956-63-28-A-9
W9GIL... 4950-55-30-A-3
W9NTP... 4294-31-26-A-5
W9MJE... 3519-51-23-A-8
W9QJW... 3360-42-28-A-9
K9NZJ... 2040-40-17-A-6
W9KIZ... 2024-44-23-B-5
K9JZE... 2016-42-16-A-3
W9PST... 1881-33-19-A-3
K9CSC/9... 1836-36-17-A-5
W9ABU... 819-21-13-A-10
W9IZO... 360-12-10-A-2
K9IOS... 60-5-4-A-3
W9IEV... 48-4-4-A-3
W9ONY... 27-3-3-A-7
W9HIX (K9ESE, K9CMP)
55,610-417-67-B-40

DAKOTA DIVISION

North Dakota
W0WFO... 87,936-458-64-A-32
W0JWL... 38,430-306-63-B-18
K0B8V... 24,623-171-49-A-26
K0B3Q... 18,001-150-41-A-29
K0B5W... 15,378-128-44-A-26
W0GNS... 8424-73-39-A-7
K0ADI... 6383-64-34-A-6
K0GRM... 432-18-5-A-2

South Dakota
W0PRZ... 107,529-738-73-B-35
W0WUU... 1254-33-19-B-3

Minnesota
W0VPI... 28,000-200-70-B-40
W0TFC... 23,610-141-15-B-32
K0LOE... 23,652-230-54-B-31
K0LJP... 22,425-150-50-A-21
W0SCL/9... 19,278-153-42-A-18
K0GVS... 4200-50-28-A-6

DELTA DIVISION

Arkansas
K5JPB... 51,881-290-61-A-31
W5GRT/5... 9552-100-32-A-10
K5WXP... 3-1-1-A-1

Louisiana
W5KC... 123,917-617-67-A-37
W5NIN... 113,610-546-70-A-34
W5HUM... 81,908-417-67-A-40
W5YVI... 37,127-237-53-A-38
W5LDH... 55,512-258-72-A-22
K5KLA... 30,096-176-57-A-16
W5VND... 22,875-155-50-A-15
W5QPS... 14,364-126-38-A-16
W5ZAK... 9997-79-43-A-14
K5FJH (W5B FJH GZR, K5B EAW ELP GEZ)
7752-104-38-B-21

Mississippi
K5MDX... 179,900-821-73-A-35
W5DQK... 169,944-777-73-A-38

Tennessee
K4LTA... 82,973-383-71-A-7
W4IGW... 42,210-202-70-A-28
K4RWT... 28,773-214-46-A-28
W4HUC... 26,992-247-56-B-29
W4SZE/4... 11,718-93-42-A-22
K4RST... 9254-100-31-A-9
W4TDX... 3666-47-26-A-12
W4ODR (K4R OXV, W5CWP, K6LNX)
10,340-119-44-B-20

GREAT LAKES DIVISION

Kentucky
W4VJV... 18,411-181-51-B-16
W4NWT... 9879-89-37-A-7
W4SMU... 975-25-13-A-3
W5EPB/4... 312-11-8-A-4

Michigan
K8CPM... 64,823-324-67-A-32
K8HJS... 52,266-281-62-A-37
K8JDR... 36,207-225-54-A-27
W8RDX... 31,350-190-55-A-23
W9TDC... 27,215-170-58-A-4
K8CHS... 24,308-143-57-A-24
K8EAP... 18,240-160-38-A-30
K8GTO... 18,000-120-50-A-11
K8LDZ... 16,077-112-40-A-16
W9UCO/8... 14,243-106-45-A-35
W8NBN... 12,960-136-48-B-17
K8HEQ... 11,435-118-33-A-10
K8CUE... 9168-96-32-A-11
W8JKD... 5016-66-38-B-16
W8NLI/8... 4192-66-32-B-9
W8SWI... 44-19-B-6
K8HFX... 1995-49-14-A-10
W8KNP... 743-17-15-A-2
K8HKS... 627-19-11-A-4
K8UIM... 12-2-A-1
W8SH (K2KNZ, W8UQN, K8HIV)
53,100-295-60-A-36



K0CHE, top scorer in Missouri, started SSing as a Novice in 1955. His scores kept improving and reached 102,900 this 25th Sweepstakes. Equipment in use included a DX100, Communicator, SX-71 and 75A-1.

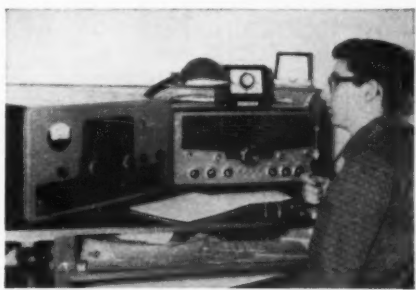
Ohio
WSAJW... 134,136-625-72-A-37
W8VOW/8... 105,630-506-70-A-35
K8AEK... 74,444-350-71-A-10
W8BIM... 42,120-325-65-B-32
W8UON... 36,456-196-62-A-31
W8BMX... 31,800-200-53-A-23
W8UXP... 30,000-200-50-A-26
W8TDB... 29,260-267-55-B-31
K8JSZ... 27,318-236-58-B-37
W8FEM... 25,281-162-53-A-22
K8JNH... 23,712-153-52-A-37
W8HQK... 22,650-151-50-A-15
W8IRM... 22,050-150-48-A-18
W8OMY... 16,200-100-54-A-27
W8RCK... 8343-103-27-A-10
K8LXI... 7191-71-34-A-11
WSAJH... 6426-97-34-B-9
W8GAT... 5890-70-28-A-6
W8EPB... 4836-64-39-B-10
W8NAL... 4788-57-28-A-7
W8GRQ... 2652-51-26-B-5
K8RGO... 2178-33-22-A-10
W8TIT... 2142-42-17-A-4
W8KXP... 1824-32-19-A-5
K8AAG... 1804-41-22-B-8
K8BPY... 1342-27-1-B-3
W8PCS... 1200-30-20-B-2
W9PLQ... 1148-26-15-A-2
K8RFT... 972-27-12-A-4
K8AET... 570-19-10-A-2
W8CWM... 306-17-6-A-2
W8TJT... 288-12-8-A-7
W8NTR... 144-8-6-A-5
W8IBN... 108-9-6-B-1
W8DGO... 3-1-1-A-1

W8VFX/8 (6 ops)
65,045-232-65-A-37
W8CVW (W8CVW, K8LHI)
22,896-212-36-A-23
W9LBU/8 (W8B DLB TTN, K8C EZJ)
2212-41-28-B-13

HUDSON DIVISION

Eastern New York
K2ZAU... 25,520-235-55-B-21
W2RSH... 12,120-102-40-A-15
K2CJJ... 11,132-122-46-B-22
K2MYL... 1155-28-14-A-3

N. Y. C. E. I.
K2MDL... 71,888-338-71-A-40
K2TAP... 65,489-350-63-A-38
K2IDZU... 39,117-222-59-A-38
K2RAN... 37,632-230-56-A-27
W2WPH... 36,600-200-61-A-18
W2YUQ... 36,456-219-56-A-21
K2BGO... 34,020-210-54-A-18
W2MAF... 30,324-266-57-B-30
K2LGS... 26,047-214-61-B-18
K2MCO... 25,500-170-50-A-23
K2BGO... 23,616-164-48-A-21
K2QDD... 18,225-137-45-A-22
K2GIC... 17,820-135-44-A-17
K2BRQ... 15,732-171-46-B-20
W2LND... 15,120-128-40-A-1
F2IQJ... 13,899-113-41-A-14
K2RYI... 13,821-137-51-B-28
F2T8W... 13,311-132-34-A-12
W2OME... 12,555-93-45-A-26
W2PDU... 12,543-113-37-A-9



Typical of the efficient way younger hams are snapping up section awards is the operation of K8CPM, a 16-year-old vocalist who led 20 Michigan phone fanciers with 64,823 points.



Alberta honors and distinction of making the leading Canadian score go to VE6TP. Single-band operation on 28 Mc. accounted for Gene's score of 54,251.

W2EHC...10,500-100-35-A-16
W2QEF...10,148-108-33-A-24
K2IHS...9887-85-39-A-15
K2YGN...9765-105-31-A-16
K2CTR...8607-70-38-A-14
K2KJV...7140-85-28-A-16
K2LGM...6712-74-32-A-10
W2JGQ...4587-51-29-A-8
W2OHC...4016-50-27-A-13
K2JHW...3750-50-25-A-9
K2MFO...3000-50-20-A-6
K2EWD...2988-42-24-A-8
W2EUV...1485-28-18-A-5
W2MGV...1860-31-20-A-12
K2AAW...1248-26-16-A-5
W2KVL...1242-23-18-A-4
K2GJF...819-20-14-A-6
K2 MV...663-17-13-A-2
W2RWX...540-15-12-A-2
K2BRS...540-15-12-A-2
K2UYG...432-16-9-A-1
K2REX...351-13-9-A-4
K2GHE...336-14-8-A-3
K2PHF...208-13-8-A-1
K2AED/2...179-9-7-A-2
K2PHO...108-12-3-A-1
K2GYO...105-7-5-A-3
K2PRP...105-7-5-A-3
W2KLS...54-6-3-A-8
K2THU...54-6-3-A-8
K2UQN...27-3-3-A-1
K2PNK...24-4-2-A-3
K2RAF (K2S QYF RAF)
61,709-327-63-A-27

Northern New Jersey
K2LXL...85,626-429-68-A-28
K2UQD...70,119-371-63-A-39
W2OXG...49,959-274-61-A-26
K2EYZ...49,698-251-66-A-24
W2PEV...39,843-233-57-A-28
K2JQU...20,907-152-46-A-34
K2ISC...20,202-130-52-A-25
K2PGJ...15,972-125-44-A-13
W2JRH...5697-106-18-A-6
W2LOP...5508-77-30-A-3
W2JLX...4368-52-28-A-8
K2LES...2618-77-17-B-12
K2TSD...3276-42-26-A-8
W2WCC...2537-45-19-A-8
K2GDR...1584-33-16-A-13
K2OHC...1512-25-21-A-5
W2GLX...462-14-1-A-2
K28BT...12-3-2-B-1
K2VQZ (K2S MEQ PBP VQZ)
65,210-334-64-A-31
K2R9G (K2S NRH RCG)
9370-103-17-B-13
W2REH (K2ZREH, K2ZMZ)
8460-119-30-B-1

MIDWEST DIVISION

Illinois
W0AXE...77,088-407-64-A-38
K0MMS...61,419-347-59-A-33

K0DPT...60,060-455-66-B-37
K0LUZ...50,496-273-61-A-7
K0LYV...16,854-108-53-A-22
W0FWO...15,840-132-38-A-19
K0LJZ...13,832-184-38-B-16
K0MDS...12,771-101-43-A-26
K0HFW...11,115-129-15-B-18
W0SQN...8820-98-30-A-6
W0GQE...5580-62-30-A-20
W0BGR...5130-57-30-A-6
K0MMQ...495-15-11-A-1
W0MHC (3 ops)
29,646-162-61-A-20

Kansas
K0RNZ...126,931-652-67-A-37
W0QMS...67,737-337-67-A-34
W0MXG...64,446-111-68-A-25
K0AYS...41,940-233-60-A-21
K0APO...26,280-146-60-A-14
K0WIC...20,880-145-18-A-15
W0TIV...11,844-94-12-A-9
W0IFR...11,468-122-17-B-9

Missouri
K0CHE...102,900-492-70-A-40
W0RXG...45,750-250-61-A-38
K0MOD...43,900-250-58-A-25
W0SPO...36,383-274-45-A-27
K0LRS...29,841-173-58-A-30
K0JZW...28,959-200-49-A-29
K0RSV...16,667-137-41-A-21
K0JJC...12,144-139-41-B-14
W0ETV...7352-85-29-A-1
K0BYN...5400-60-30-A-6
K0DEQ...3036-44-23-A-7
K0JPL...625-18-10-A-1
W0ZLN (7 ops)
23,775-163-50-A-31
W0QON (10 ops)
8400-108-42-B-17
W0FLN (2 ops)
420-14-10-A-2

Nebraska
K0DLL...75,600-420-60-A-29
W0VST (4 ops)
72,427-548-67-B-40

NEW ENGLAND DIVISION

Connecticut

W1FYF...49,248-288-57-A-26
W1NFT...47,988-263-62-A-26
K1IDP...33,139-225-53-A-21
W1YWC...31,182-198-53-A-10
K1ARI...16,298-133-41-A-12
K1BEL...13,680-130-35-A-19
K1DGN...11,673-162-51-A-13
W1ZDP...1272-27-16-A-2
K1KAC...924-28-11-A-4
K1EIG...756-25-12-A-3
W1YOK...430-15-11-B-1
K1GUD...84-7-4-A-1

W1UED/13...9-3-1-A-1
K1BEB (W1CMB, K1BEB)
84,630-404-70-A-40

Maine
W1GKJ...56,640-296-64-A-39
W1UOT...47,610-265-60-A-34
W1YDA...45,508-367-62-B-32
K1DPM...41,664-254-56-A-38
W1DIS...21,950-221-50-B-12
K1DWQ...14,307-127-38-A-31
K1AKO...5700-76-25-A-4
W1KGB...5206-71-38-B-10
K1AIF...4635-52-30-A-8

Eastern Massachusetts
W1QWL...83,622-640-66-B-36
W1OTL...48,221-267-61-A-28
W1PKY...42,120-244-60-A-26
W1JNX...17,292-131-44-A-18
W1BSG...10,800-80-45-A-12
K1EKE...10,659-106-34-A-12
W1LMI...9744-116-42-B-25
W2KCD/1...5070-65-26-A-18
K1ACJ...3300-50-22-A-11
K1IDY...1710-29-20-A-2
W1IEF...1680-41-14-A-12
W1SPH...750-25-15-B-3
W1MEG...726-22-11-A-1
W1COL...165-11-5-A-1
W1ETH...105-7-5-A-1
W1KBN (W1S EJJ HGT)
J1YV...10,104-722-72-B-40
W1AF (K2HGM, W5CPQ)
4557-75-31-B-1
W1JMS (W1JMS, K1S BID)
796-27-14-B-8

Western Massachusetts
W1EKO...122,040-574-72-A-36
W1DSS...74,188-540-48-B-35
K1CTD...37,668-172-73-A-13
W1DGJ...36,792-219-56-A-25
K1AFD...23,551-163-51-A-27
K1CFD...24,360-203-40-A-24
W1RMR...20,250-135-50-A-15
W1WF...495-17-10-A-2

New Hampshire
K1DFM...64,838-319-65-A-11
K1BRS...12,067-87-47-A-11
W1HAM...11,970-105-38-A-19
W1CVC...3113-42-25-A-9
W1OQG...861-21-14-A-4

Rhode Island
W1BFB...92,070-466-46-A-1
W1REK...9120-76-40-A-24
W1AWK...3060-34-30-A-8

W1TNH (K2OYJ, K4AKP, K9AOX) 4526-73-31-B-1

Vermont
K1BXY...5841-59-33-A-23
W1EIR...4928-77-32-B-9
K1BXL...882-28-12-A-7
K2HVN/1...612-17-12-A-1
W1HFS...3-1-1-A-1

NORTHWESTERN DIVISION

Alaska
K17CKB...25,493-158-55-A-24
K17CTB...14,022-114-41-A-10
K17CRE/K17 12-2-2-A-1
K17CTB (K17S CND CTB)
12,390-118-42-A-1

Idaho
K7BWV...9083-89-35-A-1

Montana
W7TFM...92,058-461-67-A-37
W7NVP...71,363-367-67-A-37
W7OVJ...60,378-354-58-A-34
W7FTN...36,294-284-46-A-17
W7CBY...36,192-232-52-A-17
K7BVO...18,093-166-37-A-10
W7BPG...4845-50-34-A-17

Oregon
W7OVA...112,962-589-64-A-39
W7CMC...64,929-472-69-B-32
W7ETL...42,900-263-55-A-15
W7SRX...24,592-233-53-B-14
W7EYF...23,694-182-44-A-11
K7ADI...4800-66-25-A-15

Washington
W7BSW...142,350-650-73-A-37
W7WDM...123,680-604-70-A-37
W7UWT...105,984-516-69-A-38
W7IRK...103,194-546-63-A-40
W7BLX...72,638-376-65-A-25
W7DGM...63,114-316-67-A-32
W7GRM...44,064-288-51-A-18
W7DHW...24,780-140-50-A-22
W7EYU...21,390-153-46-A-15
K7BSR...23,244-152-52-A-25
W7CCY...17,157-133-43-A-10
W7EJD...3975-53-25-A-7
K7BRQ...486-18-9-A-1
W7LCS...60-5-4-A-2
W7DSW (2 ops)
25,530-185-46-A-35

(Continued on page 170)



K4SXO, E. Fla. top scorer, put 40-20-15-10 to good use in his first contest try. Jerry came up smiling with 640 QSOs in all sections and tabulated 137,423 points which also led his division. Some of the certificates visible are Asst. EC, WAC, CP-30, Grave Yard and Flamingo Net, WAS and RCC.

PHONE WINNERS, 25TH A.R.R.L. SWEEPSTAKES CONTEST

Section	Call	Score	Transmitting Equipment	Receiving Equipment	Bands Used
E. Penna.	W3ECR	107,967	32V3	75A4, conv.	75, 40, 20, 15, 10, 6
Md.-Del.-D. C.	W3AZD	68,625	Apache	NC300	40, 20, 15, 10
S. N. J.	K2MPB	89,892	DX100	75A4	75, 40, 20, 15, 10
W. N. Y.	K2BHP	106,088	DX100	NC183D	75, 40, 15, 10
W. Penna.	W3LWW	47,190	Sig. Shifter-807-8005	NC300	75, 40, 20, 15
Illinois	K9ATZ	116,070	Viking II	NC300	75, 40, 20, 15, 10
Indiana	K9CLO	77,380	VFO-6AG7s-2E26-1-250A	HR07	75, 40, 20, 15, 10
Wisconsin	K9ALP	142,350	Viking II	NC300	75, 40, 20, 15, 10
No. Dakota	W0WFO	87,936	Viking I	HQ170; HQ120X	75, 40, 20, 15, 10
So. Dakota	W0PRZ	107,529	Viking II; 5100B	75A4	75, 40, 20, 15, 10
Minnesota	W0VIP	28,000	4-400A	NC183D	40, 20, 15, 10
Arkansas	K5JPB	51,881	Ranger	NC98	75, 40, 20, 15, 10
Louisiana	W5KC	123,917	32V3	HR07	75, 40, 20, 15, 10
Mississippi	K5MDX	179,690	6AU6-12BY7-6146-1-500A	HQ110	75, 40, 20, 15, 10
Tennessee	K4LTA	82,973	Viking I	SX101	75, 40, 20, 15, 10, 6
Kentucky	W4JVJ	18,411	Globe King	NC183	75, 20, 15, 10
Michigan	K8CPM	64,823	Valiant	SX101	40, 20, 15, 10
Ohio	W8AJW	134,136	32V1; Communicator	HQ120X; Communicator	75, 40, 20, 15, 10, 6
E. N. Y.	K2ZAU	25,520	Valiant	SX99	75, 40, 20, 15, 10
N. Y. C.-L. I.	K2MDL	71,888	DX100; Gonset II	SX100; Gonset II	75, 40, 20, 15, 10
N. N. J.	K2LXL	85,626	DX100	HQ150	75, 40, 15, 10
Iowa	W0AXE	77,088	Ranger	NC360	75, 40, 20, 15, 10
Kansas	K0RZS	125,931	Viking II	NC300	40, 20, 15, 10
Missouri	K0CHE	102,900	DX100; Communicator	SX71; 75A1; Communicator	40, 20, 15, 10, 6
Nebraska	K0DLL	75,600	DX100	NC300; SX1C1	75, 40, 20, 15, 10
Connecticut	W1FFJ	49,248	DX100	SX71	75, 40, 15, 2
Maine	W1GKJ	56,640	Viking II	HR060	75, 40, 20, 15, 10, 6
E. Mass.	W1QWI	83,622	Viking 500	SX101	75, 40, 20, 15, 10
W. Mass.	W1EKO	122,010	32V2; Communicator	NC183; Communicator	75, 40, 20, 15, 10, 6
N. H.	K1DFM	64,838	DX100	SX43, QF1	75, 15, 10
R. I.	W1BFB	92,070	Ranger-813	NC300	75, 40, 15, 10
Vermont	K1BXY	58,411	DX35	SX25	75, 40, 20, 15, 10
Alaska	K17CKB	25,493	Ranger	SX101	40, 20, 15, 10
Idaho	K7BWW	96,831	DX100	75A4	40, 20, 15, 10
Montana	W7FFM	92,058	DX100	SX71	75, 20, 15, 10
Oregon	W7OVA	112,992	Viking I	75A2	75, 40, 20, 15, 10
Washington	W7BSW	142,350	Valiant	NC300	75, 40, 20, 15, 10
Hawaii	KH6IJ	31,578	HT32-4-250s	75A4	20, 15, 10
Nevada	W7ZCA	138,495	DX100	RME 4350A	40, 15, 10
Santa Clara V.	K0ERV	105,468	Valiant	75A2	40, 20, 15, 10
East Bay	W0PQW	188,100	VFO-6AG7-2E26-811A	75A4	40, 20, 15, 10
San Francisco	K6HIP	43,173	DX40	NC101X (modified)	10
Sacramento V.	K6OND/6	62,628	Ranger	AR88	75, 40, 15, 10
San Joaquin V.	K6OOW	103,740	Viking II	HQ110C	75, 40, 15, 10
No. Carolina	K4IEW	96,579	Ranger	SX99	75, 20, 15, 10
Virginia	K4HUU	90,405	DX100	NC306, DB23	75, 40, 20, 15, 10
W. Virginia	K8KLI	102,168	Viking II	HR060	75, 40, 20, 15, 10
Colorado	W0CYT	132,057	T90	NC300	40, 20, 15, 10
Utah	W7DTB	106,232	6A8-6AG7-807s-813s; 6A8-6AG7-807s-4-400A	Super Pro	75, 40, 20, 15, 10
New Mexico	W5MYI	126,735	DX100	SX1C1	40, 20, 15, 10
Wyoming	W7ZZZ	50,324	DX100	SX24	40, 20, 15, 10
Alabama	K4LNQ	42,036	DX100	SX99	40, 20, 15, 10
E. Florida	K4SXO	137,423	Valiant	NC300	40, 20, 15, 10
W. Florida	K4CEP	27,300	Valiant	NC98	40, 20, 15
Georgia	W4FGH	120,258	813; 6146 SSB	75A3; HQ129X; BC348	40, 20, 15
West Indies	C03HD	7410	813	SX28	20, 15
Canal Zone	KZ3GT	53,543	5100B	NC300	15, 10
Los Angeles	K6EVR	212,321	Viking II; 6146s	75A1	40, 20, 15, 10
Arizona	W7ENA	71,760	HT9	SX96; NC183D	75, 40, 20, 15, 10
San Diego	W6WDL	3785	DX100	SX101	15, 10
Santa Barbara	K6SDE	9555	DX100	NC125	20, 10
No. Texas	W5UMP	92,616	DX40	S76	40, 20, 15, 10
Oklahoma	W5HWL	108,216	5763-5763-5763-6146-813	NC300	75, 40, 20, 15, 10
So. Texas	K5EDM	115,405	DX100	SX100	40, 20, 15, 10
Maritime	K8LTZ/VO1	22,343	Apache	SX25	20, 15, 10
Quebec	VE2AZI	45,296	Ranger	HRO	75, 40, 20, 15, 10
Ontario	VE3DRL	11,280	12J5-6AG7-1625s-813	Homebuilt (10-tube single conv.)	40
Sask.	VE5FN	26,871	Viking II	HRO	75, 40, 20, 15, 10
Alberta	VE6TP	54,251	Ranger	HQ110	10
B. C.	VE7CE	53,213	Valiant	SX71, DB22	40, 20, 15, 10
Yukon	VE8FO	27,094	431B-I	51J-4	20, 15, 10

High school senior W1EKO kept things hopping up W. Mass. way in ferreting out contacts on 75 through 6 meters. Proof of his success is the section award, 574 two-ways with 72 sections. Antennas were dipoles on 75 and 40, 4-element beams on 10 and 6, a 3-element beam on 15 and ground plane on 20. Four years of operation have brought DXCC 130, WAC, WAS, CP-30.

June 1959





Hints and Kinks

For the Experimenter



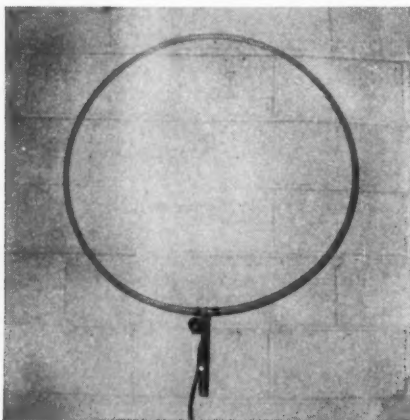
SOLDERING IRON CLEANER

SOLDERING iron tips can be cleaned easily without sandpaper, files or wire brushes simply by using a Sal-Ammoniac brick. The brick can usually be purchased from hardware or plumbing supply houses. Place the hot soldering iron tip against the Sal-Ammoniac brick and the oxide coating will be removed quickly.

— Alex Toke, K2YVQ

HULA D.F. LOOP

SHOWN in the photograph is my revised Hula Hoop. As the name signifies, it is a direction finding loop made from the infamous hula-hoop. Mine was designed for 75-meter operation so that I could participate in the local 75-meter transmitter hunts. Here are the constructional details: First a handle had to be attached. This was accomplished by drilling a hole in the hoop tube and attaching an 8-inch piece of broom handle with a wood screw. The loop consists of 185 turns of No. 18 enamel wire with the turns spaced about $\frac{3}{8}$ of an inch apart. A check with a grid-dip meter indicated the resonant frequency of the hoop was a bit high. Rather than add more wire, I attached a 50 μmf . variable capacitor in series with the coil. Now I can tune the hoop from 3.5 to 4.0 Mc with the capacitor. The addi-



K5AHT's Hula D.F. Loop

tion of a piece of low impedance coaxial cable connected to the capacitor and coil¹ completed the Hula D.F. Loop.

— Bobby J. Bellar, K5AHT

¹ Campbell, "Hula-Hoop Helical Halo," QST, Feb., 1959

TRANSISTOR B.F.O.

FIG. 1 shows a transistor b.f.o. that can be used with any receiver having a 455-ke. i.f. It is basically a Colpitts oscillator and uses a 2N190 transistor. I built the unit in a b.f.o. can discarded

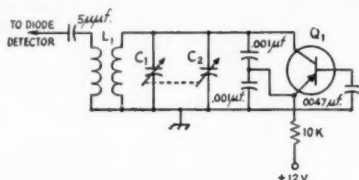


Fig. 1—Transistor b.f.o. The tuned circuit L_1 , C_1 , C_2 is the b.f.o. assembly from a 1.5 to 3 Mc. ARC/5 receiver. Q_1 —2N190, CK768, 2N107

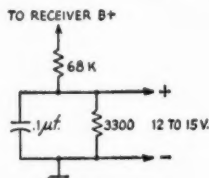


Fig. 2—The voltage divider connects to a 250 to 300-volt source. Resistors are $\frac{1}{2}$ watt.

from a 1.5 to 3 Mc. ARC/5 receiver. The oscillator tank $L_1C_1C_2$ is the b.f.o. coil assembly from the 1.5 to 3 Mc. ARC/5 receiver. The oscillator is coupled to the receiver detector through the 5- μmf . capacitor. Since the unit requires only 12 volts at 60 μa ., it makes a convenient b.f.o. for mobile operation. It can also be incorporated into the home receiver by using the voltage divider shown in Fig. 2. The divider is connected to the receiver B-plus line.

— Charles Hartley, K6GQL

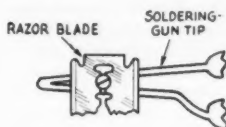
A PANADAPTER CONNECTION FOR THE 75A-4

I FOUND an easy way to connect a BC-1031C panadapter to my 75A-4 without the need for much more than lifting the cabinet lid. Connect the hot wire from the panadapter cable to the tube shield of the 6BA7 second mixer and ground the outer shield of the cable to the receiver chassis. When replacing the tube shield, push it down to within $\frac{1}{32}$ of an inch from the tube base shield, but don't let it touch! This forms a concentric capacitor around the tube and provides sufficient coupling between the receiver and panadapter.

— Robert W. Westcott, W8DNY

CUTTING 32 T.P.I. MINIDUCTORS

THE difficult task of cutting fine pitch Miniductors can be easily accomplished by breaking a discarded razor blade in half and fastening



one half of the blade to the tip of a soldering gun as shown in Fig. 3. Slip the blade between the turns to be cut and switch on the soldering gun. As the blade warms up it will cut through the plastic. Don't allow the tip to remain hot too long as this will melt the plastic and loosen adjacent coil turns. Incidentally, for safety's sake, hold the razor blade in a vise and break it with pliers.

— E. A. Sahn, W5FFE

BACK TO BACK TRANSFORMER CIRCUITS

FIG. 4 shows a simple circuit that I use around the workshop when I need isolated 117-volt a.c. The circuit also provides a handy source of low voltage a.c. for test set-ups. Be careful not to exceed the power rating of the transformers.

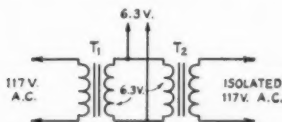


Fig. 4—Back to back filament transformers provide a source of isolated 117 v.a.c.

T₁, T₂—6.3 V. filament transformers.

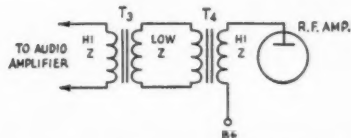


Fig. 5—Makeshift modulator using two output transformers.

T₃, T₄—Audio output transformers.

The circuit in Fig. 5 has two audio output transformers back to back and allows an ordinary audio amplifier to be used as a modulator. The Class C load should have a value close to the high impedance value of the transformer T₄.

—Donald R. Wesson, K4HCZ

CLEAR PLASTIC REFINISHING

RESTORATION of transparency and lustre to scratched or fogged clear plastics is easily done by going over the surface of the plastic with fine grade steel wool. Use fast light strokes until

the entire surface is matted. Don't concentrate on individual scratches; bring the entire surface down to the level of the deepest scratch. After the surface is leveled and evenly matted, apply ordinary household silver polish cream and rub lightly with the finger tips or with a piece of fine chamois. A few minutes of light rubbing will make the plastic as clear as glass.

—John B. Ferguson, jr., W3AEV

IMPROVING THE OPERATING CONVENIENCE OF THE NATIONAL NC-109

RECENTLY, I purchased a National NC-109 receiver and its companion frequency standard, the XCU-109. It soon became apparent that

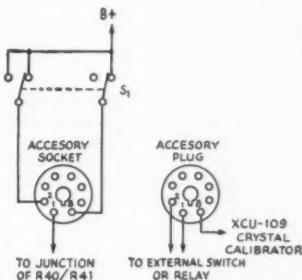


Fig. 6—NC-109 connections to improve operating convenience.

these two items needed improvement. First, there was no way to switch the receiver to standby other than with the panel receive/standby switch. This prevented the use of an external relay or switch for station control. Also, there was no means of controlling the crystal calibrator from the front panel. In order to use the calibrator, it was necessary to reach over and behind the receiver.

By replacing the original receive/standby switch and utilizing two of the three unused pins on the accessory socket, the above operating difficulties were overcome. The diagram for the changes are shown in Fig. 6. Replace the existing s.p.s.t. receive/standby switch with a d.p.d.t. toggle switch S₁. The high voltage lead that was connected to the original switch should be transferred to pin 1 of the accessory socket. Now remove the two wires from pin 8 of the accessory socket but leave them connected. Place a lead from pin 8 of the accessory socket to the d.p.d.t. switch as shown in Fig. 6.

With these modifications, the switch in one position will allow the receiver to operate normally with the calibrator off. In the other position, the receiver will be on with the calibrator. For standby, the connection between pin 1 and 2 is broken with a switch or relay. The calibrator is connected to pin 8 of the accessory plug.

—Donald G. Blake, W1TDD

B.C. BAND HALO

BECAUSE I wanted to use my 6-meter halo for broadcast reception I tried connecting the halo to the car b.c. set. Reception was poor and only a few very strong stations were copiable. To remedy the situation, I installed a 400- $\mu\mu\text{f}$. ceramic capacitor C_1 between the ground end



Fig. 7 — Diagram of the 6-meter b.c.-band halo.

of the halo and the shield of the coaxial cable as shown in Fig. 7. With this arrangement, I am able to receive signals on the b.c. band and still use the antenna for 6-meter operation.

— *Barrie C. Hiern, K5SGP*

USING THE HEATH VF-1 TO DRIVE THE AT-1 ON 15 METERS

UNFORTUNATELY, it is impossible to use the Heath VF-1 v.f.o. with the AT-1 transmitter on 15 meters because the AT-1 requires a fundamental frequency of about 5.3 Mc. at the oscillator in order to quadruple to 21 Mc. The VF-1 is not designed to give 5.3 Mc. output so crystal controlled operation is the only method possible on 15 meters with the AT-1.

However, since the 11-meter band is no longer usable, the 11-meter portion of the v.f.o. (which normally oscillates around 6.7 Mc.) can be changed to tune to 5.3 Mc. and used to drive the AT-1 on 15 meters. All that is necessary is the addition of a 68 $\mu\mu\text{f}$. silver mica capacitor across the 11-meter trimmer capacitor in the VF-1. This will lower the frequency of the oscillator to about 5.3 Mc.

Calibration of the VF-1 is accomplished by using the station receiver after it has been calibrated to WWV. The 11-meter trimmer is then adjusted until the high end of 15 meters falls in line with the upper end of the old 11-meter band on the VF-1 dial. This places the low end of the 15-meter band a bit below the bottom end of the 11 meters on the dial but the entire 15-meter band will be contained within the high-frequency side of the VF-1 dial.

Spot checks throughout the band will give markers for rough calibration. To operate on 15 meters, switch the VF-1 to 11 meters, zero beat and you're in business. The above changes don't require changing the calibration of any of the other VF-1 bands.

— *Capt. Frank T. Moss, K2TMI*

SHIELDING DUMMY LOADS

WHILE checking a new rig I connected a dummy load (a 25-watt lamp) to the transmitter. During the checks I heard an out-of-town station calling CQ. I was still using the dummy antenna on the transmitter but since I was tuned up on his frequency I gave him a call just for fun. Not only did I make the contact but I also received a good report!

A later check with a field-strength meter indicated an extremely strong r.f. field around the lamp. I applied several coats of conductive paint (Television Tube Coat, General Cement No. 49-2) to the glass envelope around the lamp, leaving a small $\frac{1}{4}$ -inch circle to allow observation of lamp brilliance. After this coating, the field-strength meter gave only a slight reading a few inches from the dummy load. Now, the lamp makes a good dummy antenna.

— *Harrison A. G. Stone, K2LIF*

CORRECTING WRONG-WAY GRID CURRENT IN THE HEATHKIT DX-100 AND APACHE TRANSMITTERS

UNDER certain conditions during tune-up the final grid current reading on both the DX-100 and Apache transmitters will go below zero. With the change shown in Fig. 8, the meters will read actual grid current without going below zero.

On the Apache, the change is easily made by shifting the yellow wire from terminal C-2 to C-1, as shown in Pictorial 22, page 67 of the Apache instruction book. On the DX-100 it will be necessary to add an insulated terminal. Mount the terminal on the spade bolt that holds the v.f.o. bracket adjacent to the 500,000-ohm clamp-circuit potentiometer (see Pictorial 7, page 34 of the DX-100 instruction book).

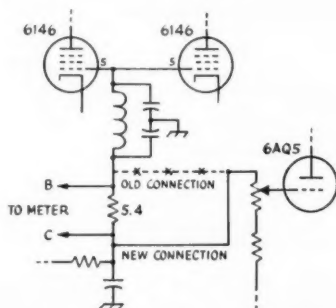


Fig. 8—New connection to improve the DX-100 and Apache meter circuit.

Remove the violet wire and the 5.4-ohm resistor from terminal 3 of the 500,000-ohm clamp circuit potentiometer. Reconnect these leads to the insulated terminal. Now connect the vacant potentiometer terminal (3) to the other side of the 5.4-ohm meter shunt.

— *Harold C. Jensen, W1LUW*

TR SWITCH

HERE is a t.r. switch that I use with my Navigator transmitter and HQ-100 receiver. It's easy to build and there is nothing critical to adjust. The circuit for the switch is shown in Fig. 9. The output circuit, including the 180-ohm resistor, 0.002 μ f. capacitor and the r.f. choke, should be shielded. Ideally, the switch would be mounted as close as possible to the final ampli-

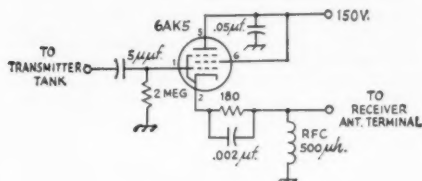


Fig. 9—Diagram of the t.r. switch

fier tank circuit to prevent pick-up. Be sure to use an input capacitor that will safely handle transmitter voltages. Also, use of the switch will depend on the voltage that may be safely applied between the grid and cathode of the tube.

—Ray Smith, W7UZI

DECAL COATER

THE exasperating experience of having decals wrinkle because of a slight overdose of lacquer or plastic spray induced me to find a sure-fire non-curl method of coating. The solution—Polaroid Print Coater. It comes supplied with every package of Polaroid Land film and is used to protect the pictures from grease and give a lustrous finish to the print. Place some of the solution over the decal with the applicator and you have a non-wrinkle coating.

—Richard E. Bakula, K0MOD

TRANSMITTER NEUTRALIZING WITH THE STATION RECEIVER

RECENTLY, while neutralizing a new transmitter I tried using the station receiver as a neutralizing indicator. High voltage was removed from the transmitter final amplifier tubes and a short piece of coax was connected to the transmitter output. The coax was terminated with a wide spaced two turn coil about $\frac{3}{8}$ inch in diameter. A one-turn coil of the same diameter was connected to a short piece of Twin-Lead which in turn was connected to the receiver's antenna input terminals. The receiver was then tuned to the transmitter frequency.

With drive applied to the transmitter final amplifier, adjust both the coupling between the above coils and also the receiver's r.f. gain control for maximum S-meter reading. To neutralize; adjust the neutralizing circuit in the transmitter for minimum S-meter reading.

—Corwin Butler, K5INC

STOP ROTATOR FREEZING

A MATEURS who have experienced difficulty with beam rotators freezing-up in cold weather might be interested in my inexpensive solution to this problem. Position a 150-watt light bulb just below the rotator mechanism and enclose it with asbestos paper. Connect a heavy duty power cord to the lamp and to a power receptacle. When the temperature goes down and the rotator sticks, turn on the light bulb for about fifteen or thirty minutes. The rotator will then turn "free" again.

—John L. Spencer, K0IUC

TRANSISTOR CONVERTER

SHOWN in Fig. 10 is a circuit diagram of a 40-meter transistorized crystal controlled converter. It is a simple circuit, yet works surprisingly well considering the small number of parts it uses. The circuit is basically a Pierce oscillator with an untuned collector. The transistor used is one of the less expensive types and the crystals can be surplus. Basically, the circuit oscillates as a crystal-controlled oscillator while the input signal is injected into the base. After mixing, the desired signal is picked out by a tunable receiver. I use a 3 to 6 Mc. ARC/5 receiver with my converter. Resistor R_1 may have a value from 100,000 ohms to 1 megohm. However, I found 390,000 ohms worked best in my circuit.

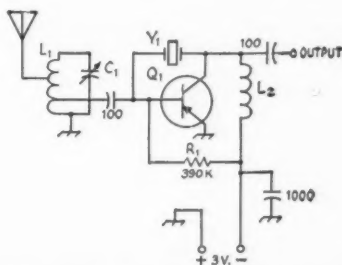


Fig. 10—Transistor crystal-controlled converter. All capacitors are in μ f., resistance are ohms, resistors are $\frac{1}{2}$ watt.

C_1 —100 μ f. variable capacitor.

L_1 —30 turns No. 22 enam. wire, close wound on $\frac{3}{8}$ inch dia. tube. Transistor tap at 3 turns from cold end, antenna tap 12 turns from cold end.

L_2 —1- to 2.5-mh. r.f. choke.

Q_1 —2N247, 2N170.

Y_1 —3700 kc. to receive 7000 to 7300 kc. when tuning receiver 3300 to 3600 kc.

With 3 volts on the collector, the unit draws about 100 μ a. When the crystal is removed, the collector current will jump to 500 to 1000 μ a. This is a good indicator to show when the circuit is not oscillating. The converter can be used to cover other bands by choosing the proper crystal and changing the input circuit to tune to the new frequency.

—Milton K. Foxworthy, W9BNW/8

1959 ARRL Field Day Rules

Annual Test for Emergency-Powered Stations, June 27-28

ALL set for the 1959 Field Day? Almost every active amateur in the 73 ARRL Sections is already aware that June is Field Day month and that more operating fun is to be had on that one June week end than at any other time during the year.

Working under conditions which could be encountered in an actual emergency, clubs and other organized groups will set up and operate multitransmitter stations independently of normal power facilities. Amateurs not with such teams will go into action as mobiles or unit-individual portables. Emergency-powered fixed stations, such as civil defense and amateur club stations, will compete in the Class D category. But whatever your method of participation, hundreds of amateurs will be scanning the bands for your signal.

The rules and entry classifications are unchanged. Pick any consecutive 24-hour period from the Field Day timetable. Once on the air call "CQ FD" on c.w. or "CQ Field Day" on phone, then give the station worked a signal report and your ARRL Section or specific location and stand by to receive like information.

Here are three examples to assist score calculations:

Example 1

Assume a 25-watt rig wholly on batteries, not originating or relaying any messages, and not having more than two operators.

49 points (40 stations worked)
× 3 (power below 30 watts)
120
× 3 (all radio equipment independent of commercial mains)
360
× 1.5 (If Class B or C and everything on batteries)
540 claimed score

Example 2

Same as Example 1 but one Field Day Message to the SEC or SCM is originated and passed in good form.

65 points (40 QSOs + 25 points for FD message)
× 9 (3 × 3 — power multiplier multiplied by independence-of-mains multiplier)
585
× 1.5 (everything on batteries)
877.5 claimed score
(Copies of all messages originated and relayed must accompany Field Day reports.)

Example 3

The Podunk Hollow Radio Club (or any group of three or more licensed operators), portable at its FD site, operates two transmitters simultaneously. Each rig runs 75 watts input and batteries or generators furnish power. One message is started in good form (25 points), 1 is received and relayed onward (2 points), and 230 stations are contacted.

257 points (230 QSOs + 25 + 2)
× 2 (power input over 30 and under 150 watts)
514
× 3 (all gear independent of mains)
1542 claimed score
(No battery multiplier for either clubs or groups.)

Clubs should get every member-owned mobile

unit active and report their aggregate scores to ARRL. Our increased showing through individual mobile reports and club aggregate mobile scores is important because such units are considered indispensable in civil defense planning.

Convenient log forms and summary sheets are now available from the ARRL Communications Department. You may make up your own, but please remember to include starting and ending time of operating period, bands used, dates and contact times, calls of stations worked, signal reports sent and received, and locations of stations worked as well as power sources and inputs, location and call of station, number of transmitters in simultaneous operation, number of persons participating, club name (if any) and score computations. To assure listing in the final results in QST, mail your logs by July 25.

Read over the rules below and review the results of last year's FD in December 1958 QST. Then you're ready to join in the portable fun and help make the 1959 Field Day the most successful amateur emergency test yet!

Rules

1. Eligibility: The Field Day is open to all radio amateurs in the sections listed on page 6 of this issue of QST.

2. Object: For portable and mobile stations to work as many stations as possible; for home stations to work as many portable and mobile stations as possible.

3. Conditions of Entry: Each entrant agrees to be bound by the provisions of this announcement, the regulations of his licensing authority, and the decisions of the ARRL Contest Committee.

4. Entry Classification: All entries will be classified according to number of transmitters in simultaneous operation. They will be further classified as follows: "A," club or nonclub group portable stations; "B," unit or individual portable stations; "C," mobile stations; "D," home stations operating from emergency power; "E," home stations operating from commercial power sources. Thus a club or group running three transmitters simultaneously will be in the 3A classification, or a mobile station with one transmitter will be in the 1C classification.

Portable stations are those installed temporarily, for FD purposes, at sites away from customary fixed-station locations. Portable equipment or units must be placed under one call and the control of one license, for one entry. All control locations for equipment operating under one call must lie within a 1000-foot diameter circle.

Group participation is that portable-station work accomplished by three or more licensed operators.

Unit or individual participation is that portable-station work accomplished by either one or two licensed operators.

Mobile stations are complete installations including power source and antenna, mounted in or on vehicles and capable of being used while in normal motion. If they utilize antenna supports not normal or suitable for use during motion, installations must be classified as portable instead of mobile. Each mobile entry call must be different from any other FD station participating.

Home-station participation is that work by fixed amateur stations not operating portable or mobile.

A transmitter used to contact one or more stations may not subsequently be used under more than one other station call during the Field Day period.

5. Field Day Period: All contacts must be made during the period indicated elsewhere in this announcement. An entry may be operated no more than 24 consecutive hours of the 27 hours available.

6. Bands: Each phone and c.w. band is regarded as a separate band. The following (and additional u.h.f.-s.h.f. bands) constitute separate bands: A1: 1,800-1,825 "east" or 1,975-2,000 "west," 3.5-4.0, 7.0-7.3, 11.0-14.35, 21.0-21.45, 28.0-29.7, 50-54 and 144-148 Mc. (A2, radio-teletype and frequency-shift keying are grouped with A1, in the bands where they are allowed). A3: 1,800-1,825 "east" or 1,975-2,000 "west," 3.8-4.0, 7.2-7.3, 14.2-14.3, 21.25-21.45, 28.5-29.7, 50-54, and 144-148 Mc. All forms of voice transmission will be grouped with A3, in the bands where they are allowed. (In Canada and Cuba, their respective phone bands apply.)

The use of more than one transmitter at one time in the same band is not allowed.

7. Exchanges: Signal reports and ARRL section (or specific location) must be exchanged in proof of contact.

8. Valid Contacts: In Class A, B and C, a valid contact is a completed exchange with any amateur station. In Classes D and E, a valid contact is a completed exchange with any station in Class A, B or C. Cross-band contacts are not allowed. Contacts by mobile stations may be made in motion or from any location(s). A station may be worked more than once only if the additional contacts are made on different bands.

9. Field Day Message: A Field Day Message is one originated by a Class A, B, or C station and addressed to the SEC or SCM (see address in QST, p. 6) stating the number of operators, the field location, and the number of AREC members at the Field Day station. Only one Field Day Message may be originated.

10. Scoring:

Points: Each valid contact counts 1 point.

Message Credit: Credit for handling messages may be obtained only as follows: 25 points for originating one Field Day Message to SEC or SCM. In addition, each Field Day Message received for relay will score 1 point when received by radio and 1 point when sent onward by radio. No FD Message may pass through the same station twice. There will be a deduction of 10 points for omission of handling data or for defects in form. Copies of all messages originated and relayed must accompany Field Day reports.

Multippliers:

Power: Output-stage plate input 30 watts or less: 3. Output-stage plate input between 30 and 150 watts: 2. Output-stage plate input between 150 and 1000 watts: 1. The plate input of a grounded-grid amplifier is its plate input plus the plate input to the driver stage.

Independence-of-Mains: All radio equipment independent of commercial power source: 3. All radio equipment not independent of commercial power: 1.

Battery Power: (applies to Class B and C only): 1.5. The battery capacity or size shall in all cases be adequate to permit one hour's continuous operation of the station. Charging batteries from commercial mains while batteries are

FIELD DAY TIMETABLE

Time	Start	End
	June 27	June 28
AST	5:00 P.M.	8:00 P.M.
EST	4:00 P.M.	7:00 P.M.
CST	3:00 P.M.	6:00 P.M.
MST	2:00 P.M.	5:00 P.M.
PST	1:00 P.M.	4:00 P.M.

(Operate no more than 24 consecutive hours out of the total 27-hour period)

connected to transmitter or receiver voids the "independence-of-mains" and "battery power" multipliers.

Multippliers do not apply to Class D and E entries.

Final Score: The final score equals the total "points" multiplied by the "power multiplier" multiplied by the "independence-of-mains" multiplier (multiplied by the "battery power" multiplier, if applicable). Where different multipliers apply during the Field Day period, points are multiplied by the multiplier in effect at the time the points were earned.

11. Club Aggregate-Mobile Scores: Entries under Class C may be combined to form a "Club Aggregate-Mobile Score." The club name must be noted on the individual reports, and the club secretary must submit a claimed aggregate score. Credits to the extent supported by the reports submitted to ARRL will be allowed. Only bona fide members of the club, residing in the club territory, may contribute to the aggregate-mobile club listing.

12. Reporting: Mail reports or entries on or before July 25. Reports must show starting and ending time of FD operating period, bands used, dates and contact times, calls of stations worked, signal reports sent and received, and ARRL sections or locations of stations worked. Reports must also show power inputs and sources of power, number of transmitters in simultaneous operation, location of station, number of persons participating, class of entry, and score computations.

ARRL FIELD DAY SUMMARY

Station Call..... FD Location.....
 Class of entry (underline one): A. Club or Group, Portable. B. Unit or Individual, Portable. C. Mobile. D. Home -- Emergency Power. E. Home -- Commercial Power.
 Number of transmitters in simultaneous operation.....
 If club entry, name of club.....
 Number of persons participating at this station.....
 Period of FD operation: Starting time..... Ending time.....

Bands	3.5 Mc. c.w.	3.5 Mc. A3	7 Mc. c.w.	7 Mc. A3	14 Mc. c.w.	14 Mc. A3					Totals
No. stns. worked											
Score											CLAIMED SCORE

Each entry must be accompanied by this summary (CD-66) with appropriate items filled in. If you do not use this, please prepare a facsimile. Attach logs of all Field Day contacts and copies of messages originated and relayed, if score credit is claimed.

EQT: Power Source Transmitter Input Receiver Antenna
 (Band)
 3.5 Mc. _____

This certifies that the station whose call appears above was operated in accordance with the current Field Day rules and that, to the best of my knowledge, the points and score as set forth in the above summary are correct and true.

.....
 (Date)

 (Signature of club secretary or licensee of station whose activities covered in this FD entry)



At the left is some of the very modern University of Mexico, in Mexico City, while at the right is the interior of a market in Guanajuato.

Mobiling in Mexico

BY DALTON S. REYMOND,* K6JD, XEØJD

MEXICO! — The mere word conjures up in the minds of many of us the desire for adventure in a strange, little known and primitive land; in others an extreme misconception of a hostile country teeming with *bandidos*, strife and unfriendliness. Both of these concepts are far from valid. While it is true that the country may seem strange to the first-time visitor from the United States, he will soon discover that Mexico is a land of enchantment and deep-rooted tradition, a land of sincere friendship and unbounded hospitality. It is a land of extreme contrasts of the very old with the very new; modern buildings, conveniences and facilities that compare with any in the world; fine paved highways weaving through some of the most spectacular scenery to be found anywhere in the Western hemisphere; all intermingled with unbelievable architectural gems of many bygone generations the superb construction and beauty of which are beyond description.

On every side you will see much evidence of a virile leadership and an expanding economy; huge dams and extensive irrigation projects in the states of Sonora and Sinaloa; people working, lush crops now growing in land which only a few years ago was parched desert. You will see active agriculture and new industry on the great plateau, 6500 feet above sea level, almost all the way from Mexico City through Quaretero to Lagos de Moreno; new industrial plants and extensive residential subdivisions on the rolling hills surrounding Mexico City.

But you will also see many indescribable old cities like San Miguel Allende, Guanajuato and Taxco, and many, many others of all sizes from the jungle tropics of San Blas and Nayarit to the great 7500-foot plateau in the middle of the re-

public, some perched on mountain sides, some in deep lush valleys, with their narrow cobble-stone streets and their magnificent churches and public buildings, almost untouched in their Colonial and Castilian charm.

However, if one intends to travel in Mexico and is not familiar with the marvels of its antiquity and the rich tradition and culture of this great nation to the south of us, which was great even before Columbus set foot on this continent, then he had better do some studying before he crosses the border, or stay home. If one travels in Mexico with the attitude, much too prevalent among American *turistas*, that everything in, or from, the United States is superior, and does not possess the humility to meet these friendly neighbors on an equal footing, then he, too, had better stay home. I found it to be an invariable fact that you will be repaid with two smiles for every one you give in Mexico, whether it be to the lowliest *peon* or to the *Alcalde* himself. It makes no difference. And there is much for us to learn about life and peace of mind and ease of living from these gracious and friendly and courageous people if we will just open our eyes and our hearts to them when they offer us the hospitality of their country.

They have just given freely of that hospitality and kindness to me. The three and a half weeks spent in Mexico will never be forgotten. And the summarizing of this experience is prompted by literally dozens of inquiries from my fine radio colleagues all over the United States, both during and since my trip, for information concerning various phases of mobile travel in Mexico.

First, in order to travel mobile in Mexico, a Mexican license must be obtained. This is a relatively simple matter today, although a year or so ago mobile travel there was not permitted. The

* 2205 Benedict Canyon Drive, Beverly Hills, Calif.

first step is to write to the *Liga Mexicana de Radio Experimentadores* (LMRE), Liverpool 195-A, Mexico, 6, D. F., for the application forms. They will be forwarded promptly by the very kind and cooperative *Gerente Administrativo* of the Liga, Tte. Corl. Mariano Yustus C (XE1BX) and consist of the following: (1) Application for membership in the Liga; (2) Application for the Mexican licence; (3) Waiver of U. S. immunity in case of violation of Mexican communications laws. These are to be filled out and returned with a Mexican Money Order for \$8 (U. S.) for Liga membership, and \$8.80 (U. S.) for the licence. You must also send a photostatic copy of your FCC licence, a photostatic copy of your car ownership certificate, and a letter or statement from either the Mexican Tourist Bureau or the Mexican Consulate from which you obtain your visitor's permit, good for six months, stating that you are coming to Mexico as a Tourist. All Americans going into the interior of Mexico must obtain a Tourist Permit for which the fee is \$3. No passport is required. When all these documents are sent to the office of the Liga, you will in from six weeks to two months receive your Mexican licence and the call which will be the XEØ prefix followed by your call letters. In addition, all travellers into Mexico who will return to the United States must have a vaccination certificate for small pox, which will be asked for by the U. S. Customs officer at the point of re-entry into the States.

The trip began on December 16, 1958. I must admit I had considerable apprehension about driving so far without a companion. In the first day's drive from my home in Beverly Hills, California, I reached Nogales, Ariz. in time to take care of my car insurance at the office of the AAA. Mexico Auto Insurance is a must as U. S. insurance is not in effect in Mexico. The policy covering the usual fire and theft and PD and PL plus collision cost \$42 for 30 days coverage with a rebate for each day of \$1.87 if I returned in less than 30 days. My car is a 1956 Chevrolet.

The mobile rig is a Gonset 77A and 66B with a Rafred 5-band antenna controlled from the dash of the car; and I must say here that its performance on this trip under all kinds of conditions was nothing short of amazing. It speaks more forcibly than anything I could say concerning its stability and power and precision of manufacture. I have received QSL cards from as far away as New Brunswick and Argentina and Chile, with signal reports of 30 and 40 over 9. This did not happen just one day or under freak skip conditions, but every day and almost every hour over a continuous three and a half weeks.

When I had gone about one hundred miles from my home QTH I picked up, on the mobile rig, my good friend Mac (W7BD) in Eugene, Oregon. I had talked to Mac two days previous from the inside of a brick garage in downtown Los Angeles where I was having an extra 12-volt battery installed under the hood. This contact proved to be the beginning of an almost unbelievable mobile schedule. Every day and almost



This is a monument in Mexico City, honoring Benito Juárez, the father of Mexican independence.

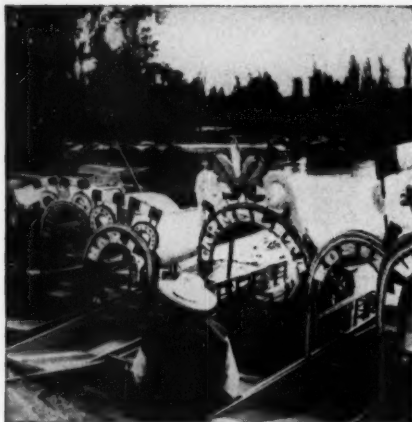
every hour thereafter when I was in motion, and many times when I was not, we kept the schedule, all the way to Taxco, 150 miles south of Mexico City, and all the way back to Beverly Hills, on 20 meters. Valleys, hills, tunnels, buildings, power lines, QRM, QSB to the contrary notwithstanding; nothing seemed to make any difference. No matter where I was or when I called, Mac was there. He had the AAA book *Mexico by Motor*, similar to the one I had in my car, and a map; he directed me almost everywhere on the trip — motels, restaurants, crossroads, mileage, etc., just as though he were sitting beside me in the car.

In addition to my regular contacts with Mac, when I got below the border and could use my Mexican licence, I could operate below the American band. One CQ would sometimes bring as many as eight or ten replies. Many thought, erroneously of course, that XEØJD was a new country. By the end of the third day my voice was almost gone. The 150 XEØJD QSL cards I took with me were exhausted a week before I returned.

For several weeks before my departure I had concentrated from my home QTH with Mexican amateurs. I was successful with about twenty-five. Without exception, when I told them of my proposed trip, they extended me their hospitality, invited me to their cities and towns, and to their homes. My only regret is that I could not visit them all. This, of course, was impossible on a three-week trip. I missed the friends I had made in such beautiful places as Chihuahua, Torreon, Gomez Palacio, Durango, Puebla and many others. But I have since made another trip at which time I visited them; and I found their cities as fascinating and their people as gracious as those I was fortunate enough to see the first time.

Interesting experiences were many and varied and unexpected from the time of crossing the border into Mexico until my re-entry into the States — far too many to be detailed in so brief a summary. But a few will illustrate.

I entered at Nogales and travelled down the



A scene in the Xochimilco Floating Gardens,
in Mexico City.

excellent paved Mexican Highway No. 15, through the surprisingly clean and modern city of Hermosillo, Guaymas, Obregon, Navajoa, Culiacan, the fascinating beach city of Mazatlán, Tepic, to my favorite city in all Mexico, Guadalajara. Arriving there about 4 in the afternoon I registered (on Mac's radio advice) at the Motel Chapalita. I tried immediately to contact my friend Luis Moragrega (XE1SN) by telephone but without success. After dinner, and still without success, I decided to drive down the Av. Vallarta and Av. Juarez through the very modern business section of the city, ablaze with neon lights, lined with fine stores and hotels. On the way back I decided to call "CQ Guadalajara" a few times, just to see what would happen. Immediately a strong carrier pinned the needle on my receiver. After about 30 seconds someone said, "XE0JD, this is XE1SN. Where are you, Ray?" Luis! I was three blocks from his home. He directed me there for a visit, and the following evening we spent together, chatting with his charming XYL, and working his Johnson 500 and 75A-4 until after midnight.

The following day I drove to Morelia, a very unusual city about 165 miles from Guadalajara, arriving there about 3 in the afternoon. After registering (again on Mac's advice) at the Villa San Jose, a superb motel on the side of a beautiful hill overlooking the city, I drove back down to the Plaza, or *Zócalo*, to take a few pictures with my Rollei. When I had parked, a *vigilante*, or watchman, offered to watch my car. I asked him, "Conoce Vd. un radio aficionado aqui en Morelia?" "Do you know a radio amateur here in Morelia?" His answer, with a big smile as he examined the whip antenna on my car, was, "Sí." And in Spanish, "Would you wish me to take you to his house?" My answer of course was also, "Sí." Through narrow, one way cobblestone streets we drove for a few blocks and soon arrived at the home of my now good friend J. Manuel Treviño (XE1TV), who owns the local radio

station. With three or four other local amateurs he was engaged in repairing his antenna transmission line. With open-armed hospitality they took me in tow, showed me all over the town, and took me to a Mexican chicken dinner. They were extremely interested in the Gonset Twins in my car, crowding inside, working Mexican and Central American and Cuban stations in Spanish, and of course my standby as usual, Mac (W7BD), in Eugene, Ore. Very little English was spoken during the evening, which caused me some pain and some strain, but it was thoroughly enjoyed.

But the kindness was not limited to the Mexican hams. At about 8 o'clock on the morning of January 1 I was driving south about 50 miles from Guanajuato on the way to Guadalajara. Over the mobile rig, one of my friends in Encino, Calif., near my home, told me about the very serious brush fire in Benedict Canyon. The fire was out of control and was threatening my home as well as many others. All that day and into the night I had almost hourly reports about the fire from such fine friends as W6HX, W6PIB, W6KUL, W6LI W6FZL (who is the Fire Chief in Van Nuys). At 8 p.m. I was sitting in the car at the Chapalita Motel in Guadalajara, 1700 miles away, still worried, still getting reports, when the deep bass voice of W6KUL called me on schedule. The fire was under control. My home was safe.

The entire trip was filled with such kind and friendly and generous experiences as these, which one cannot easily forget. Christmas lunch in Cuernavaca with Geoff Lord (XE1GE) and his delightful wife and 7-year-old twins, Pat and Mike. Lunch in Culiacan with Max (XE2K); a visit to the home of Regino Sandoval (XE2AO) in Mazatlán; a wonderful dinner in Mexico City with Rafael Villaseñor (XE1YT) and his attractive blonde wife; a memorable New Year's Eve party at the Hotel Arozco in Guanajuato; and possibly the most enjoyable of all, a delicious dinner and floor show with my good friend Bill Tapia (XE2GT) and his lovely XYL and another attractive couple in the surprisingly modern city of Hermosillo, Sonora.

One of the questions most frequently asked was about food and water in Mexico. There are excellent restaurants almost everywhere. However, green or uncooked vegetables should be avoided except in the best restaurants in the largest cities. Milk, too, and butter should be avoided except in cities where pasteurization is required by law. A simple question will bring a frank answer about pasteurization. I found that in Hermosillo, Guadalajara, Mexico City, Cuernavaca and Taxco, milk and butter were pasteurized. The water problem is quite simple. In all hotels and motels where I stopped, a pitcher or bottle of *agua purificada* was provided in every room with sterile glasses wrapped in cellophane. Practically all restaurants serve only purified water and most hotels operate their own purifying systems. Tap water is to be avoided for

(Continued on page 172)

I.A.R.U. News



QSL BUREAUS OF THE WORLD

For delivery of your QSLs to foreign amateurs, simply mail cards direct to the bureau of the proper country, as listed below. Cards for territories and possessions not listed separately can be mailed to the bureau in the parent country; e.g., cards for French Cameroons (FES) go to REF in France; cards for VP8s go to RSGB in England. W, K, VE and VO stations only may send foreign cards for which no bureau is listed to ARRL.

For service on incoming foreign cards, see list of domestic bureaus in most QST's under "ARRL QSL Bureau."

Algeria: G. Deville, FA9RW, Box 21, Maison-Carree, Alger
Angola: L.A.R.A., P.O. Box 484, Luanda
Argentina: R.C.A., Carlos Calvo 1424, Buenos Aires
Australia: W.T.A., Box 2611 W, G.P.O., Melbourne
Austria: Oe. V.S.V. P.O. Box 15, Klosterneuburg, 2
Azores: Via Portugal
Bahamas: C. N. Albury, Telecommunications Dept., Nassau
Barbados: Arthur St.C. Farmer, Storms Gift, Brandons, Deacons Road, St. Michael
Belgian Congo: U.C.A.R. QSL Bureau, P.O. Box 3748, Elizabethville
Belgium: U.B.A., Postbox 634, Brussels
Bermuda: R.S.B. P.O. Box 275, Hamilton
Bolivia: R.C.B., Casilla 2111, La Paz
Brazil: L.A.B.R.E., Caixa Postal 2353, Rio de Janeiro
British Guiana: D. E. Yong, VP3YG, Box 325, Georgetown
British Honduras: L. H. Alpuche, VP1HA, P.O. Box 1, El Cayo
Bulgaria: Box 830, Sofia
Burma: B.A.R.S. % Tara Singh, 187 Eden St., Rangoon, Burma
Canton Island: H. B. Johnson, KB6BA, U.S.P.O. 06-50000, Canton Island, South Pacific
Ceylon: P.O. Box 907, Colombo
Chile: Radio Club de Chile, Casilla 761, Santiago
China: M. T. Young, P.O. Box 16, Taiching, Formosa
Colombia: L.C.R.A., P.O. Box 584, Bogotá
Cook Islands: Ray Holloway, P.O. Box 65, Rarotonga
Costa Rica: Radio Club de Costa Rica, Box 2412, San Jose
Cuba: Radio Club de Cuba, QSL Bureau, Ayestaran 629, Altos Cerro, Habana
Cyprus: Mrs. E. Barrett, P.O. Box 219, Limassol
Czechoslovakia: C.A.V., P.O. Box 69, Prague I
Denmark: OZ2NU, Borge Petersen, P.O. Box 335, Aalborg
Dominica: VP2DA, Box 64 Roseau, Dominica, Windward Islands
Dominican Republic: R.C.D., Calle Dr Baez, No. 25, Cuidad Trujillo
East Africa: (VQ1, VQ3, VQ4, VQ5): P.O. Box 1313, Nairobi, Kenya Colony
Ecuador: Guayaquil Radio Club, Casilla 784, Guayaquil
Ethiopia: Telecommunications Amateur Radio Club, P.O. Box 1047, Addis Ababa
Fiji: S. H. Mayne, VR2AS Victoria Parade, Suva
Finland: SRAL, Box 306, Helsinki
Formosa: Hq MAAG, APO 63, San Francisco, California
France: R.E.F., BP 26, Versailles (S & O)
France: (F7 only): F7 QSL Bureau, MARS, Headquarters U. S. European Command, APO 128, New York, N. Y.
Germany: (DL2 calls only): G. E. Verrill, G3IEC, 10 Seahorse St., Gosport, Hants, England
Germany: (DL4 calls only): DL4 QSL Bureau, 604th Comm, APO 12, N. Y., N. Y.
Germany: (DL5 calls only): Via France
Germany: (other than above): D.A.R.C., Box 99, Munich 27
Gibraltar: E. D. Wills, ZB2I, 9 Naval Hospital Road

Ghana: 9G1AB, John Burton, Telecommunication School, Post & Telecommunication Dept., Accra
Great Britain (and British Empire): A. Milne, 29 Kechill Gardens, Hayes, Bromley, Kent
Greece: George Zafaris, P.O. Box 564, Athens
Greece (Unlisted SVs only): USASG, APO 200, New York, N. Y.
Greenland (OXs only): Via Denmark
Greenland: (KGIs only): MARS Director, Directorate of Operations, Hq. 8th Air Force, Westover A.F.B., Mass.
Grenada: VP2GE, St. Georges
Guam: M.A.R.C., Box 145, Agaña, Guam, Marianas Islands
Guantanamo Bay: Guantanamo Amateur Radio Club, Box 55, NAS, Navy 115, F.P.O., New York, N. Y.
Guatemala: C.R.A.G., P.O. Box 115, Guatemala City
Haiti: Radio Club d'Haiti, Box 943, Port-au-Prince
Honduras: O. A. Trochez, P.O. Box 244, Tegucigalpa, D. C.
Hong Kong: Hong Kong Amateur Radio Transmitting Society, P.O. Box 541, Hong Kong
Hungary: H.S.R.L., Postbox 185, Budapest 4
Iceland: Islenskir Radio Amatorar, Box 1058, Reykjavik
India: P.O. Box 534, New Delhi
Ireland: I.R.T.S. QSL Bureau, 39 Booterstown Ave., Blackrock, Co. Dublin
Israel: I.A.R.C., P.O. Box 4009, Tel-Aviv
Italy: A.R.I., Viale Vittorio Veneto 12, Milano, Italy
Jamaica: Ruel Samuels, VP5RS, 34 Port Royal Street, Kingston
Japan (JA): J.A.R.L., Box 377, Tokyo
Japan (KA): F.E.A.R.L., A.P.O. 994, % Postmaster, San Francisco, Calif.
Kenya: East Africa QSL Bureau, Box 1313, Nairobi
Korea: Mr. In Kwan Lee, Chief Engineer, Radio Supervisory Bureau, O.P.I.R.O.K. Seoul (HL2AM via ARRL)
Kuwait: William N. Burgess, 9K2AZ, % Kuwait Oil Co. 14—5th St. North, Kuwait, Persian Gulf
Lebanon: R.A.L., Ahmadi, B.P. 3245, Beyrouth
Liberia: (ELIs only) HARC, P.O. Box 32, Harbel
Libya: 5A2TZ, Box 372, Tripoli
Liechtenstein: via Switzerland
Luxembourg: R. Schott, rue Brouch 35, Esch/Alzette
Macao: Via Hong Kong
Madagascar: P.O. Box 587, Tannarive
Madeira Island: P.O. Box 257, Funchal
Malaya: QSL Manager, Box 777, Kuala Lumpur
Malta: R. F. Galea, ZB1E, "Casa Galea", Railway Road, Birkirkara
Mauritius: V. de Robillard, Box 155, Port Louis
Mexico: L.M.R.E., Apartado Postal 907, Mexico, D.F.
Midway Island: KM6BI AIRBARSRON Two Detachment, Midway Navy #3080, F.P.O. San Francisco, Calif.
Montserrat: VP2MY, Plymouth
Morocco: A.A.E.M., P.O. Box 2060, Casablanca
Mozambique: Liga dos Radio-Emissores de Mocambique, P.O. Box 812, Lourenco Marques
Netherlands: V.E.R.O.N., Postbox 400, Rotterdam
Netherlands Antilles (Aruba): Verona, Postbox 392, San Nicolas, Aruba
Netherlands Antilles (Curacao): Verona, Postbox 353, Willemstad, Curacao
New Guinea: Via Papua
New Zealand: N.Z.A.R.T., P.O. Box 489, Wellington CI
Nicaragua: YNIRA, Apartado Postal 555, Managua
Northern Rhodesia: N.R.A.R.S., P.O. Box 332, Kitwe
Norway: N.R.R.L., P.O. Box 898, Oslo
Okinawa: O.A.R.C., P.O. Box 739, APO 331, % Postmaster San Francisco, Calif.
Pakistan: Box 4074, Karachi
Panama, Republic of: L.P.R.A., P.O. Box 1622, Panama
Paraguay: R.C.P., P.O. Box 512, Asuncion
Papua: VK9 QSL Officer, P.O. Box 204, Port Moresby
(Continued on page 19)

Happenings of the Month

Greetings from Eisenhower

14-Mc. Phone

Geneva Proposals

C. W. on Six and Two

EISENHOWER GREETES CCIR, PRAISES AMATEURS

President Dwight D. Eisenhower, on the occasion of the opening of the CCIR international technical radio conference at Los Angeles the first of April, transmitted via amateur radio a message of greetings and welcome to the delegates from all over the world. The President's message also bestowed high praise on the amateur radio service.

Contact was made between W3WTE, the amateur station at the White House, operated by Col. E. J. McNally (W3NAL), and K6USA, the special amateur station at the CCIR conference, operated by ARRL Southwestern Division Director Ray Meyers (W6MLZ). After a word of greeting of his own, Col. McNally introduced Undersecretary of State C. Douglas Dillon, who took the mike and said:

"I am happy to join President Eisenhower in sending greetings to the amateur radio operators attending the 9th plenary assembly of the International Radio Consultative Committee. The Department of State and other agencies of the United States Government have long recognized the vital role played by telecommunications in promoting the increased exchange of information between nations that is so important to better understanding among all peoples of the world. We in government also recognize the very large part early interest in radio plays in motivating talented young people to enter science and engineering that contribute to steady improvements and new developments in international communications. I wish you well in your new project at Los Angeles and in all of your future activities."

Col. McNally then handed the mike of W3WTE to James Hagerty, White House press secretary, who read the President's message:

"First, the President wants to extend his

greetings to the delegates and visitors who have gathered from all parts of the world for the technical sessions of the international radio conference at Los Angeles. He knows that the decisions which are reached at this meeting may well play a most significant part in the future of world-wide communications everywhere. He wishes to send his best regards to all of the delegates for a most successful conference.

"Incidentally, it seems altogether appropriate that the President should send these greetings by radio directly from our amateur station in the White House to K6USA at the conference headquarters in Los Angeles. The President knows that many of the leaders in radio and communications who are now at Los Angeles from all over the globe have the same deep interest in amateur radio as we have in this country. Not only have the amateurs made a vital, technical contribution to world-wide communications since the earliest day of the art, but their unselfish devotion to the public welfare in time of emergency and disaster is well-known and appreciated by the President.

"In addition to these tangible contributions, there is still another — an intangible one that interests the President very much indeed. In this electronic age, a large proportion of our scientists and leaders in the industry got their starts by way of amateur radio. It was in this field that their scientific curiosities were first aroused. Their imaginations became kindled and they developed a first-hand understanding of the complicated principles that were involved. Consequently, the President of the United States is delighted to have an opportunity through this broadcast to salute the radio amateurs everywhere over the air. To all of them he sends his 73, good luck, and please QSL."

At K6USA the messages were acknowledged by Herbert Hoover, jr., W6ZHL.

Indiana Amateur Radio Week becomes official as Governor Harold W. Handley signs the proclamation. Watching are Doris "Butch" Singer, K9IXD, editor of *Bison*, publication of the Indiana Radio Club Council, and her OM W9SWD, who was selected by the Council in 1958 as Indiana's outstanding amateur.



QST for

U. S. CONFERENCE PROPOSALS

The Government of the United States has now transmitted to the International Telecommunications Union headquarters at Geneva, Switzerland, the text of its proposals for changes in the Atlantic City Radio Regulations of 1947, the presently effective rules which govern international radio operation.

Insofar as the amateur radio service is concerned, our Government's proposals include provision for continuance of every amateur band we now occupy.

We expect next month to have information on proposals of other governments in respect of the amateur bands.

50 AND 220 MC. CHANGES

Last year FCC, largely responsive to a petition of the U. S. Civil Defense Amateur Radio Alliance, proposed minor changes in our 50- and 220-Mc. bands. This proposal has now been made final, effective May 20, so that after that date (1) narrow-band frequency modulation for telegraphy is permitted in 50-54 Mc.; (2) remote control, previously limited to 420 Mc. and above, is now allowed in 220-225 Mc.; and (3) 6F2 emission (intended mostly for radio teleprinter) is authorized in the RACES segment 50.35-50.75 Mc.

The Commission's order accomplishing the changes reports that comment was overwhelmingly in favor of the proposal. The text of the order is not published here because exact language of the amended rules appears on page 180 of December *QST*.

W. VA. LICENSE PLATES

Add one more to the list of states issuing call letter license plates — on the third try, West Virginia amateurs were successful in convincing their legislature, and the governor, of the importance of their bill.

As in the case of Iowa, reported last month, perseverance paid off. An attempt in 1955 failed. Another the next legislative year, 1957, passed the legislature but was vetoed by the governor as "class legislation." The 1959 bill went through and was signed. Mel Swillinger, W8NLT, has headed up participation by West Virginia amateurs in their campaign. A handsome brochure was sent to each member of the legislature, containing replicas of many newspaper stories praising the performance of hams especially in the field of disaster communications, and containing also endorsements by various state and municipal officials.

The total is now 46 out of 50 states.

A campaign for call-letter license plates lasting more than a year, spearheaded by the Nova Scotia Amateur Radio Association, achieved success earlier this year. Here the Honorable G. I. Smith, minister of highways, presents the first set of plates to Hugh H. Corkum, VE1VN, club president, while E. S. Campbell (center), Nova Scotia registrar of motor vehicles and also VE1QQ, beams approval.

14-MC. PHONE

This department of April *QST* carried the announcement that FCC had, responsive to ARRL request, proposed an expansion of the 20-meter voice band so that it would become 14,200-14,350 kc. The League's filing was, of course, in support of the proposal; the text is as follows:

FEDERAL COMMUNICATIONS COMMISSION

Amendment of Section 12.111(d) of Part 12 of the Commission's Rules to permit radiotelephony between the frequencies 14,200 kc. and 14,350 kc. } Docket 12780

COMMENT OF THE AMERICAN RADIO RELAY LEAGUE, INC.

Pursuant to paragraph 9 of the notice of proposed rule-making in Docket 12780, The American Radio Relay League, Inc., files these comments on behalf of some 70,000 FCC-licensed amateurs who are members of the League.

The League urges the Commission to adopt the amendment to the amateur rules as proposed, so that radiotelephony operation will be permitted in 14,200-14,350 kilocycles.

1. In the fourteen years since World War II, U. S. amateurs have consistently expressed themselves as strongly in favor of an expansion of that portion of the 14-megacycle amateur band which is authorized for radiotelephony emission. Responsive to initial sentiment, the League in 1946 proposed to the Commission that the A3 subband be doubled; subsequently, however, so that there would be no domestic amateur questions of possible international effect pending during the Atlantic City Radio Conference or its preparatory phases, the League withdrew the proposal. In 1948, the League polled its membership on the question of doubling the A3 subband and response from 13,499 FCC-licensed amateurs, a sizeable portion of the amateur body at that time, indicated a 76.2 per cent majority in favor; the strength of this feeling was further demonstrated by the fact that when the League failed to act promptly to transmit to the Commission a request for an expansion of the 14-megacycle voice band, it caused considerable dissension among the amateur body. In 1949, the ARRL Board of Directors, responsive to the continuing problem, decided that a request to make the radiotelephony assignment 14,200-14,350 kilocycles would be submitted to the Commission when the new 21-megacycle band became available to amateurs. Such a petition was filed in 1952. In February 1954, the Commission acted on the petition and issued a notice of proposed rule-making, Docket 10927, in accordance therewith. In September 1954, the Commission dismissed the proposed amendment, stating that more experience with amateur use of the 21-megacycle band was needed before the 14-megacycle question could properly be appraised. In September 1956, again responsive to continuing amateur demand for an expansion of the voice subband, the League petitioned the Commission to authorize radiotelephony emission in 14,200-14,350 kilocycles, in addition to the present subband, but available only to holders of Advanced or Extra Class licenses. No action having been forthcoming, in May 1958 the League amended its petition by deleting its requested restriction to the two-named classes of license.



As the official Texas welcome to hams who will converge in Galveston on June 19-21 for the ARRL National Convention, Governor Price Daniel has declared the week of June 20-27 as "Amateur Radio Week." Here, a group of convention officials meet in his office in Austin: W5DMM, W5DCJ, W5ZG, W5DJD, the Governor, W5ETZ, K5AFN, and State Representative Pete LaValle.



2. We believe the above record adequately shows a continuing and widespread desire on the part of U. S. amateurs to obtain additional space for radiotelephony operation in the 14-megacycle amateur band.

3. In Docket 10927, the Commission dismissed its proposal to expand the voice subband in the belief that more experience with amateur use of the then-new 21-megacycle band was necessary before a proper appraisal could be made of the 14-megacycle question. The 21-megacycle band has now been available to the amateur service for seven years. It is well known that the voice subband at 21 megacycles is heavily occupied. But not the slightest decrease in congestion of the 14-megacycle subband has occurred. This congestion not only continues, but actually is increasing. This has occurred despite a heavy trend to the narrower-band mode of voice emission, single sideband.

4. The reasons are, of course, the continued heavy growth of the amateur body, and a trend to a greater percentage of interest in radiotelephony operation. When amateur operation was again authorized after World War II, there were approximately 60,000 licensees; today, there are more than three times that number. During this period amateur interest in radiotelephony operation has also increased considerably. Yet the space available for radiotelephony operation at 14 megacycles, a 100-kilocycle subband, remains today exactly the same as it was at the start of this growth period. We believe there is no need to point out in detail the obvious problems of occupancy created by the increase both in the over-all number of amateurs and the percentage of interest in radiotelephony.

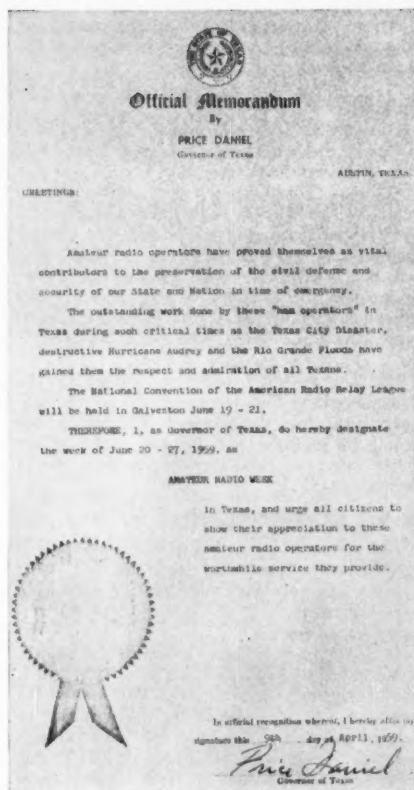
5. Responsive to amateur need, since World War II the radiotelephony subband at 4.0 megacycles has been doubled, and a new radiotelephony subband has been authorized at 7 megacycles. Similar relief has not been provided for the crowded voice subband at 14 megacycles.

6. The League is quite aware that some amateurs in countries outside the United States are opposed to an expansion of the U. S. voice band. The reason is that in practically every country, other than the U. S., amateurs are permitted radiotelephony operation in subbands considerably larger than those made available to U. S. amateurs by the Commission. Foreign amateurs feel that an expansion of the U. S. voice band at 14 megacycles will reduce the amount of space they have for radiotelephony operation, since in practice those amateurs do not use frequencies within the U. S. voice bands because of heavy interference from the predominance of U. S. amateur stations. Admittedly, this is a valid argument. However, this point has been thoroughly considered by the ARRL Board of Directors in every one of the numerous examinations it has made of the 14-megacycle radiotelephony question outlined earlier in this comment. The decision has consistently been that the advantages of expansion of the U. S. voice subband heavily outweigh this one disadvantage. The Board feels that the demonstrated need of U. S. amateurs for the additional radiotelephony space at 14 megacycles is the paramount factor.

7. The League believes that the evidence adds up unmistakably to support a need for expansion of U. S. amateur radiotelephony privileges in 14,200-14,350 kilocycles, and urges the Commission to act affirmatively on its notice of proposed rule-making in this matter.

THE AMERICAN RADIO RELAY LEAGUE, INC.
By PAUL N. SEGAL
Its General Counsel

A. L. BUDLONG
General Manager
April 30, 1959



C. W. ON SIX AND TWO

Just at press time FCC announced that it had granted petitions for reconsideration (filed by the League and others) of its earlier action which established 100-kc. c.w. sub-bands at 6 and 2 meters but at locations differing considerably from those originally requested and proposed by FCC. The Commission did not grant the request of some petitioners that establishment of sub-bands at the low ends be accomplished immediately, but does solicit the views of interested parties, by August 3, on its original proposal (published last June responsive to League petition) to set 100 kc. c.w. bands at the low ends. July QST will contain more details. **QST**

Don Mix with the *Bowdoin's* polar radio rig: left, transmitter; right top, broadcast-band receiver; right bottom, ham-band receiver; foreground, wavemeter.

The *Bowdoin's* Last Voyage

THE first ham ever to operate a short-wave set from the North Pole area — Don Mix, W1TS, of Bristol, Conn. — is giving brother hams their last chance to work the Arctic explorer ship, *Bowdoin*.

Thirty-six years ago, Mix was the *Bowdoin's* only link with civilization, pounding out his WNP call for 15 months . . . most of the time as the little ship lay frozen in solid ice at the top of the world.

This month, Mix will sail on the *Bowdoin* again as she makes her last voyage, from Provincetown on Cape Cod to the Mystic Sea Museum where she will be enshrined permanently. The schooner will take three days for the trip, stopping at Newport, R. I. and Stonington, Conn.

Details were not settled at the time of this issue, but information on Mix's call sign (probably K1WNP) and frequencies will be sent on a W1AW bulletin about the middle of June.

Mix sailed in June, 1923 with Arctic explorer and scientific researcher Admiral Donald B. MacMillan.

It was a great day for amateur radio.

"The greatest hardship of the Arctic explorer is to be cut off entirely from his own world," said Admiral MacMillan in June, 1923.

"I wish to express my deep appreciation to all members of the American Radio Relay League for their cooperation in making possible the first real radio work in the Arctic regions."



And *QST* editors wrote:

"It offers us amateurs an opportunity to see a business through which everybody admits we alone can do."

Hams all over the world pitched in.

Night after night, they crouched over their sets, searching the air for Mix' elusive WNP signals.

Only a few could work WNP through the hail of QRN and QRM that blanketed calls coming out of the long Arctic night. One was 6CEU in Hawaii, working with three 5-watters.

"MIM!" commented Mix. "I nearly fainted."

In 1923, a "short"-wave set was pretty long. Mix worked on 220 meters.

"During the winter we copied scraps here and there that experiments were being made on waves below 200 meters. We had an available wave of 175 meters but the stations we worked invariably reported N.D. on this wave and requested QSY back to 220.

"If we had been able to get down to 100 meters or lower, we would have been able to keep in constant communication during the light period as well as the dark period."

Mix sent regular news reports for a syndicate of papers. The reports were painstakingly copied in code by earnest hams and delivered to the nearest syndicate newspaper.

"Almost all traffic was cleared with the greatest difficulty, repeat after repeat being necessary," Mix commented later.

"Enough credit cannot be given to those fellows who stuck at the job and copied our weak and fading signals."

Mix, now an assistant technical editor of *QST*, is a lanky, sandy-haired man who smokes constantly and talks very little.

Asked why he spent 15 months at the North Pole, he puffed his cigarette and shrugged.

"Guess I wanted to."

Was it interesting?

"Yes."

See anything unusual? Mix considered.

"Walrus."

— F. M.

QST

W1TS circa 1923

Ham Radio Aids Nonstop Solo Flight

BY JEAN A. GMELIN,* W6ZRJ AND ROBERT C. SMITHWICK,** W6JZU

DURING the past several decades, amateur radio has shown an ability to provide communications during national disasters and emergencies. While such contributions to our nation are important, there are other contributions of amateur radio that are also of service to the public interest, including such things as amateur third party message work, radio communications for expeditions, such as the recent work at Antarctica; and communications services of one sort or another for various public agencies and organizations.

Such a communications service was given the past summer during the record-breaking solo nonstop light plane flight from Manila to Pendleton, Oregon, by Captain Marion L. "Pat" Boling, a commercial airline pilot.

Such flights take a great deal of planning, and Boling spent almost a year working with the Beech Aircraft Corporation, working out the details of the venture and making practice flights.

Boling, who lives in Palo Alto, California, is a close friend of co-author Dr. Robert C. Smithwick, W6JZU, of Los Altos, California, who spends much of his operating time on 20-meter s.s.b. Some two months before the proposed flight time, Boling visited W6JZU and gave him much detail of the flight plan, which called first for a flight across the Pacific, island hopping to Manila, the starting point of the long flight back. Not much arrangement had been made for radio communications, other than the equipment in Boling's Beechcraft Bonanza. After some thought, W6JZU suggested ham-band skeds from the various islands on the trip out to Manila as the perfect way for Boling to talk with his family in Palo Alto.

Shortly before the flight, Boling again visited W6JZU and brought with him officials of the

Beech Company who were helping with the flight. With such interest shown, W6JZU started setting up amateur skeds with stations on the various Pacific islands that were to be used as stop-over points on Boling's trip out.

W6JZU runs a Hallicrafters HT-32 and HT-33 combination at one kw., into a tri-band beam. The receiver was an SX-101, and he had no trouble in first contacting KH6AHQ in Honolulu, the first stop-over point. Other proposed stop-overs were Wake, Guam, and Manila, the starting point for the trip back.

Wake and Guam proved no more difficult than KH6-land, thanks to the cooperation of the Pacific Net on 14,256 kcs. W6JZU contacted KG6AHU, PN net control, and arranged the Guam schedule. As luck would have it, when W6JZU asked for a Wake Island station, KW6CE checked in and offered his services. As it turned out, KG6AHU did not actually handle the Guam traffic when Boling arrived later. Traffic was handled by KG6NAA located right on the Guam air field where Boling landed.

At 1800 PDST July 14, Captain Boling arrived at Honolulu from California, and upon arriving at his hotel was able to talk with his family via KH6AHQ and W6JZU. Other schedules were kept during Boling's two-day stay.

On July 17, Boling flew the 2300 miles to Wake. W6JZU was in contact with KW6CE on Wake when Boling came in for a landing. Immediately upon arrival at Wake, Boling was again in contact with his XYL, Joyce.

Ham radio also helped when Boling made ready to leave Wake. For some reason, the flight to Guam had not been cleared with the Navy department. Boling talked with the Beech Company at Wichita, Kansas via W6JZU, and the necessary clearance papers were sent out by special airline delivery from Washington, D. C. When Boling left Guam for Manila, there was no further direct contact with him by amateur radio. However, W6JZU kept constant contact with KG6FAF who kept up with Boling's progress via a MARS sked with Manila. Pat had been held up by a typhoon and W6JZU was able to relay the news of his safe arrival to Boling's family, who were anxiously awaiting the news.

When Boling left Guam, W6JZU began to try to find a way to keep up with the progress of the return flight through amateur radio. Since Boling is not a ham, and carried no amateur gear, there could be no direct contact via amateur radio. However, the proposed flight path was right up

Mrs. Pat Boling talks with her husband as W6JZU looks on and controls the audio.



QST for

the Aleutian Island chain where a number of KL7s are in operation. W6AEW, a United Airline traffic dispatcher in San Francisco, contacted W6JZU with an offer to help with traffic via various KL7s at Pacific NW Airways stations from Japan to Seattle along the proposed flight path.

KL7FLA, near the North Pole with an IGY team, knew many amateurs in the Alaska area and helped set up schedules for the flight. Stations included KL7AZN, Adak; KL7AWR, Kodiak; and KL7BYN, Anchorage. By now what had started out as a few phone schedules had turned into a major communications project, with W6JZU putting in long hours of operating time and keeping a number of schedules with stations throughout the Northern Pacific. The various news services by this time were interested in following the story of Boling's flight, and since communications to the various points along the route were very difficult, the newsmen began to rely on W6JZU for up-to-date information.

The relatively short (1593 miles) flight to Manila was the most hazardous of the trip out. Severe head winds, the aftermath of a typhoon, made flying extremely difficult and tiring. Poor visibility and gusty winds forced him to fly at altitudes ranging from as low as 600 feet above the water to 16,000 feet above. He was met and escorted the last few miles by four Bonanzas, two twin Bonanzas, and an F86 jet interceptor (flying with gear and flaps down). Pat Boling descended on the Philippines and was welcomed by a crowd of some 5000 people at the airport.

Boling left Manila for the long solo flight at 1509 PDST, July 30, and W6JZU received the news minutes later via KG6FAF and MARS. W6JZU kept in constant contact. It was at this time that K2OHB/KL7, at Cold Bay, overheard these QSOs and offered assistance. Since he works for the Northwest Air Lines, he was able to pick up information from various sources and relay progress reports to W6JZU, who relayed the information on to Boling's family, Beech officials who were anxiously awaiting the outcome, and to the various news services.

W0MGG/KL7 at Shemya also broke in to offer help and relayed information that he was talking to Boling who planned to land at Boise, Idaho. This was because Boling ran into icing conditions along the way and was delayed slightly.

KL7BYN in Anchorage checked the weather over the Aleutians while KL7AWR in Kodiak and KL7AZN at Adak secured the latest information on the winds aloft from the CAA and relayed it on to Pat on the airways frequencies. South of Cold Bay, Alaska, it was very cold,

below freezing outside at 6000 feet, and the wing surfaces began to ice up. Boling ran into a cloud condition that intensified this icing and he tried to "get on top of it", but it rose right up with him. About this time things began to happen. He had no de-icing equipment. The engine did not like the cold and began running rough. Pat had no alternative but to descend through all this "stuff" to try to get underneath it before the plane went out of control. During this activity Boling made preparations to ditch in case the worst happened. Luckily at 1500 feet it began to rain and the icing cleared up. Through all this, for the first time, Pat detoured to the east to get over land, over Queen Charlotte Island, in the event that he had to make an emergency landing. This, of course, plus the rough engine and the unplanned-for climb cost him many gallons of precious fuel.

W6JZU kept a constant contact with Boling's progress throughout the long flight. Boling arrived over Seattle at 1140 PDST, August 1. He flew over Yakima, and then to Pendleton, Oregon, where he landed to set an official single engine light plane distance record of 6856.32 miles non-stop. His fuel tanks were nearly dry. The official recorded time was 45 hours, 52 minutes. This broke the previous record, held by the late Bill Odom, by 2000 miles.

Pat was out of communication range, or at least unable to copy any signal, for long hours at a time. He transmitted his position report blind every hour, and strangely enough most of these PX reports were heard and recorded despite the fact he was not receiving confirmation. At times he relayed his PX reports on v.h.f. to passing Northwest Airline planes who in turn relayed the information.

While the amateur communications involved are probably not a first, it is a probable near first for such a bulk of a.s.b. communications work. Much of the news of Boling's progress that appeared in newspapers across the country came via W6JZU's station.

A number of amateurs throughout the Northern Pacific Area gave assistance to W6JZU. Among the most outstanding were KG6AHU, KW6CE, KH6AHQ, KG6NAA, KG6FAF, KL7FLA, KL7AZN, K2OHB/KL7, W0MGG/KL7, KL7BYN, and KL7AWR. W6AEW came over and helped as an assistant operator at W6JZU.

QST

Pat Boling and his Bonanza.

June 1959



Silent Keys

It is with deep regret that we record the passing of these amateurs:

W1CPK, Paul A. Carroll, Reading, Mass.
 W1NRG, Erwin D. Biechert, Meriden, Conn.
 ex-KN2DSY, Mary Martin, Bronx, N. Y.
 W2HLA, Rev. Joseph L. Jarvis, Barrytown, N. Y.
 W2ITJ, Stephen M. Bedell, Ozone Park, N. Y.
 K2IZG, Richard B. Hill, Sayville, N. Y.
 K2KUI, Ivar S. Wiman, Madison, N. J.
 W2PKQ, James V. LaRossa, Batavia, N. Y.
 W2RWZ, William Goldstein, Forest Hills, N. Y.
 K2VLF, John C. Hoffman, Clifton, N. J.
 W3AAX, Francis E. Burke, Pittsburgh, Pa.
 W3KCL, Kenneth R. Sweeney, Camp Hill, Pa.
 W3MS, Armand H. Mayer, Erie, Pa.
 W3TKN, Thomas S. Bray, Havertown, Pa.
 ex-4AI, H. E. Bussey, Atlanta, Ga.
 K4BO, Roy C. Ehrhardt, Chester, Va.
 K4IKH, Col. Herman L. Purkhiser, Falls Church, Va.
 K4VPB, John G. Lamie, Saltville, Va.
 KN4VVZ, Thomas L. Parsons, sr., Cookeville, Tenn.
 KN4YJC, Thomas Erik Oberg, Arlington, Va.
 W5IPE, Robert A. McCulloch, Wharton, Texas
 W5JQD, T. Bruce Craig, Lubbock, Texas
 W5PFD, Clifton C. Ferguson, jr., Jackson, Miss.
 K6DCT, Allen B. Flowers, San Pedro, Calif.
 K6IPQ, Arthur Edward Ziesing, Culver City, Calif.
 KN6OME, Louis Dorin, Long Beach, Calif.
 W6QKP, Charles W. Tessier, Stockton, Calif.
 W6UHI, Leroy C. Nimmo, Los Angeles, Calif.
 W6UOD, Jess H. Green, Hawthorne, Calif.
 W7OLF, Stephen W. Comish, Elko, Nev.
 W8LS, John A. Kramer, Charleston, W. Va.
 W8TSK, Robert V. Lukes, S. Charleston, W. Va.
 W9DVI, Otis A. Howard, Ziegler, Ill.
 W9NFF, Charles E. Strecker, Danville, Ill.
 ex-W9LQ, Carl W. Dean, Indianapolis, Ind.
 W9VO, Richard J. Lyons, Libertyville, Ill.
 W9CBL, Lester Dent, La Plata, Mo.
 KH6ALX, Sammy M. Kusline, Molokai, Hawaii
 KH6BWG, William O. Kupele, Molokai, Hawaii
 LU3HR, ex-LU2CW, Ricardo G. R. Radaelli, Cordoba, Argentina
 ZL3AR, David W. Buchanan, Ashburton, New Zealand.

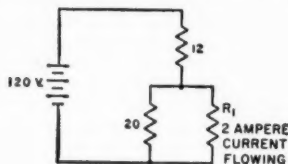
L. Boyd Laizure, WØRR

Amateur radio has lost another long-time League member and former ARRL director with the recent passing of L. Boyd Laizure, WØRR. He had served the League as director in 1924 and 1925.

He retired from government service as a radio operator about two years ago, but had continued to be an active amateur. He had served as president of the Heart of America Radio Club in 1956, and had attended a meeting of the club only a few days before his death.

Quiz Quiz

Bob Eldridge, VE7BS in Vancouver, recalls a problem from RAF school that was somewhat similar to the January, 1959, Quiz. In the circuit below, what is the value of R_1 ?



You were on the nose last month if you found $R_1 = 9416$ and $R_2 = 5581$.



June 1934

... The editorial of twenty-five years ago mentioned that some sources felt that the frequencies above 60 Mc. might someday prove so worthwhile that they would be parceled out neatly to the various services.

... The second ARRL Field Day contest was announced. ... W1DF described a simple two-tube receiver, while W1AL wrote about the RK-20 and some suitable circuits. The RK-20 was a nifty suppressor-type screen-grid tube which was first described in the May 1934 issue.

... W5VU described a crystal-lock system for having crystal control and high power, a method for low-cost conversion of high-powered oscillators to crystal control. ... W2BSL showed a medium-power 56-Mc. transceiver. ... W. M. Smith discussed automatic gain control with diode detection.

... K7BWZ (an Alaskan call in those days) told how he put together a flea-power transmitter from a weird collection of junk.

... W2AOE described a ham station analyzer, a device for making various r.f. and a.f. observations around the shack.

... This issue also carried a six-page report on the 1934 meeting of the ARRL Board of Directors. One of the principal items of business was the change to the by-laws which limited voting to those members who were licensed amateurs. The Federal Radio Commission was asked to open all amateur frequencies above 56 Mc. to mobile operation and was also asked to assign exclusive amateur segments at 112, 224, 448, 896 and 1792 Mc.

... W2AIS and W2AKF described an ultra-midget transmitter housing a 10-watt r.f. section plus power supply all in a 5 x 5 x 6 metal box.

... A west-coast technical man, W6CAL, had an article "Simplifying Split-Stator Final Amplifiers."

... And lots more. All in all, a real dandy issue.



Y L NEWS AND VIEWS

CONDUCTED BY ELEANOR WILSON,* W1QON

RESULTS: TENTH ANNUAL YL-OM CONTEST

AS PREDICTED, scores were higher in this year's YL-OM Contest than in any of the previous nine YLRL-sponsored parties. And, as usual, everyone participating, from the first-time contestant to the veteran top scorer, seemed to have one fine time.

YLRL vice president and chief log-checker Gladys Eastman, W6DXI, relayed comments from the YLs and OM's which read like a mutual admiration society's resumé of a friendly fray.

YLs W5DRI and W1RLQ and OM's K6SXA and W8AJW were also among the top winners last year. Dena Morgan, W5DRI, captured first place phone honors for the second consecutive year. John Siringier, W8AJW, has been a top-YL-OM contest scorer since 1952.

Cups have been awarded to the YL and OM first place phone and first place c.w. winners. Certificates have been awarded to second and third place phone and c.w. winners and to the highest scorers in each district.

Here are the top winners. Congratulations to all.

YL

First place c.w.	W2MWY	38,018*
Second place c.w.	K17ALZ	37,584
Third place c.w.	W1RLQ	35,010*
First place phone.	W5DRI	70,088*
Second place phone.	K5BNQ	52,800*
Third place phone.	W5ERH	47,570*

OM

First place c.w.	K6SXA	2,931*
Second place c.w.	K9ALP	2,138*
Third place c.w.	W5DQK	2,103*
First place phone.	K9ALP	7,031*
Second place phone.	K6SXA	5,536*
Third place phone.	W8AJW	4,995*

YL C.W.

No. of Sections			No. of Sections		
Call	Contacts	Score	Call	Contacts	Score
W1RLQ	389	72 35,010*	W2MWY	411	74 38,018*
W3SL/1	256	42 13,440*	K2JYZ	186	50 11,625*
W1COL	157	45 8,831*	K2ULP	215	29 7,794*

*YL Editor, QST: Please send all news notes to W1QON's home address: 318 Fisher St., Walpole, Mass.

No. of Sections			No. of Sections		
Call	Contacts	Score	Call	Contacts	Score
K2UTS	124	31 3,844	W7HXE	154	36 6,930*
W3CUL	392	49 24,610	W7PUV	142	38 6,745*
W3JWM	320	46 18,100*	KNTEQM	73	29 2,646*
W3TSC	225	42 11,813*	W8QOQ	331	60 24,825
K3CRE	227	37 10,499*	W8HAV	167	40 6,680*
W3UTR/3	136	34 5,796*	W8KLZ	23	10 288*
K3EHZ	101	33 4,166*	W9MLE	205	41 8,461*
K4JYQ	212	52 13,780*	W9USR	137	40 6,850*
K4SAF	138	31 5,348*	W9YT/		
K4TFL	89	33 3,671*	K9BRJ	160	34 3,460
W6QYL/4	50	25 1,250	W9MYC	77	25 2,403*
W5EGD	343	56 19,208	W9OMZ	19	14 299*
K3LIU	269	46 15,468*	K0IKL	361	47 21,299*
W3WXY	119	35 4,165	K0EDH	316	50 19,756*
K3PFF	75	26 2,438*	K0GIC	187	39 9,116*
W6WDL	185	42 9,713*	K0LYV	100	33 4,125*
K0OWQ	116	38 5,510*	G2YL	81	29 2,936*
W6PCA	119	35 5,206*	K17ALZ	464	81 37,584
K6KUP	63	27 2,126*	K6QPI/		
W6EHA	36	20 900*	KW6	8	6 60*
K6SYR	22	14 381*	SP5YL	47	24 1,410*
K6HOL	15	10 188*	VE2AOB	50	19 1,188*
W7PTX	209	45 11,756*	VESDZ	229	43 9,847
			ZL2JO	45	34 1,985*

OM C.W.

W1008	39	22 858	W1NJL	13	8 130*
W1BGA	34	20 680	K1CAK	9	5 56*
W1MIX	27	16 513*			
W1SAD	23	18 518*	K2DSW	60	28 2,100*
W1FO	25	16 500*	K2EIU	52	25 1,625*
W1LQ	22	17 468*	W2MTA	50	26 1,625*
W1LQ	21	14 368*	W2FLD	44	26 1,430*
W1OPZ	22	13 358*	K2UTM	40	26 1,300*
W1NLM	23	14 322	W2EMW	42	24 1,260*
W1AZW	18	13 293*	W2SAW	47	20 1,222



No. of Sections			No. of Sections				
Call	Contacts	Score	Call	Contacts	Score		
W2CVW...	44	22	968	W8AQ...	56	26	1,820*
W2N1Y...	32	21	840*	W8YGR...	48	25	1,500*
K2GTC...	29	21	761*	W8UMP...	48	23	1,380*
K2PFC...	34	20	680	W8JIN...	54	25	1,350
W2LHL...	26	17	552*	K8CHG...	45	23	1,294*
W2DUN...	23	17	489*	W8APN...	41	22	1,128*
K2MJM...	19	11	261*	K8GWK...	37	22	1,018*
K2PTU...	14	12	168	K8ERO...	37	19	703
W2DTL...	10	10	125*	W8NAN...	31	18	698*
W2CJM...	10	9	90	W8KKV...	24	17	510*
K2EBO...	7	5	44*	W8DEZ...	13	12	195*
K2OEG...	7	5	44*	W8LSJ...	13	12	156
W2LKG...	5	4	25*	K8JLF...	8	6	60*
K2UZJ...	2	2	5*				

W3MDO...	57	28	1,995*
W3ARK...	56	29	1,614
W3E1W...	49	22	1,348*
W3MFW...	43	24	1,290*
W3VTT...	38	23	1,080*
W3FOX...	43	24	1,032*
W3JO...	30	22	825*
K3ALL...	30	21	630
W3ADE...	25	16	500*
K3AHT...	25	15	469*
K3CXX...	22	16	440*
K3DHX...	24	14	420*
W3CDG...	23	14	403*
W3UIU...	8	4	40*

W4UJ...	43	23	1,236*
K4IEX...	40	22	1,100*
K4IRM...	40	21	1,050*
W4GKH...	37	21	971*
W4ZQK...	34	18	765*
K4PHY...	30	17	638*
W4CNZ...	26	18	585*
W4KMS...	26	18	585*
W4GOJ...	20	14	350*
W4SOT...	16	11	220*
W4IFT...	9	8	90*

W5DQK...	58	29	2,103*
K5JCC...	57	26	1,482
W5KEA...	44	22	1,210*
W5VZU...	33	20	825*
W5AWT...	36	22	792
K5OCX...	22	15	412*
W5ZAL...	19	14	333*
K5PFL...	8	7	70*

K68XA...	67	35	2,931*
W6KAO...	46	21	1,208*
K6EIE...	25	18	502*
K6CJF...	25	16	500*
K6BFZ...	15	10	187*
K6GLS...	9	7	63

W7ECX...	28	19	665*
W7VIU...	27	20	540
K7APJ...	22	15	413*
K7BSR...	14	11	193*
W7WRT...	14	11	193*

YL PHONE			YL PHONE		
No. of Sections			No. of Sections		
Call	Contacts	Score	Call	Contacts	Score
K1DGG...402	53	26,633*	W3JST...81	26	2,106
W1RLQ...355	57	25,294*	W3GTC...76	16	1,520*
W1ICV...260	40	10,400			
K1ADY...129	32	5,160*	K4IFF...408	54	27,540*
W1UKR...63	16	1,060*	K4TGA...381	57	21,717
W1MDB...75	10	938*	W4QNI...365	53	19,345
			W4BIL...330	42	17,325*
K2JYZ...127	30	4,763*	W4WYR...317	43	17,039*
W2EWO...105	32	4,200*	K4ANY...294	42	15,435*
W2OWL...26	13	423*	W4WPD...210	40	10,500*
W2AKM...26	1	33*	W4KZT...198	34	8,425*
			W6QYL/4...44	21	924
W3TNP...369	44	20,295	K4WZC/...		
W3UTH/3.114	35	4,988*	W4EJC...36	10	360

(Continued on page 176)

All Ready?

The mere mention of Field Day should catapult you into action. If you haven't already laid your plans for that challenging week end coming up fast June 27 and 28.

Last year several YL clubs operated FD, some participating as a club for the first time. Reporting encouraging success and large doses of fun were the GAYLARKS (Gulf Area YL ARK), Camellia Capital Champs, San Francisco YLRC, Women Ham Operators of Texas, and the Women Ham Operators of Tarrant County, Inc. A number of YLs operated individually and reported their FD doings back to us.

This year we'll be standing by for a mail pouch full of feminine FD tales and pictures to prove them!

Coming YL Get-Togethers

Eleventh ARRL National Convention

The eyes of the ham world will be on Texas, Galveston specifically, the week end of June 19-21 when thousands of hams converge for the eleventh national convention of the ARRL. Something to intrigue everyone is the keynote to all convention activities, from a wide range of technical sessions and forums to a gala beach party on the balmy shores of the Gulf of Mexico. Last month's QST outlined general convention plans, including a schedule of prices on page 70 and pictorial previews on pp. 68-69.

A program designed to make licensed YLs feel especially glad they came has been exactly planned by members of the GAYLARKS (Gulf Area YL ARK) under the direction of President Lillian Beebe, W5EGD. A breakfast with YLRL forum, a special hobby display booth, hospitality room and ham station are just a few of the highlights arranged for the licensed YLs, while still leaving plenty of time for them to take in various ARRL and technical sessions. In fact, GAYLARK strongly urges YL attendance at such sessions in keeping with our special prerogatives and obligations as amateur radio operators.

Time is short. Requests for reservations or information should be sped to the Galveston County ARC Convention Committee, Box 73, Route 1, Galveston, Texas. CU there!

ARRL New England Division Convention

We predict new superlatives will be coined to describe the convention for all New England hams to be held on Labor Day week end, Sept. 5 and 6 at the new Statler Hotel in Hartford, Conn. If you enjoy getting together with ham friends from all over W1 land in slightly elegant, exceptionally comfortable surroundings (at modest cost), then make your Labor Day date now. The Hartford County ARA is the sponsoring club. Details of the YL program will be given here next month.

Gem Bach, W5DJC, XYL of Norman Bach, W5DJD, chairman of the coming 11th National ARRL Convention, is shown operating the Galveston County Amateur Radio Club station W5KMK in the lobby of the Galvez Hotel at the recent Southwest Electronics Conference in Galveston.



QST for

Perhaps ham radio is often "sold" to newcomers by means of a picture and a few words of description. The YLs in the photos shown here represent different age groups and positions in life. We think each in her own way could sell amateur radio to newcomers merely by the example she has unknowingly set.



K9OHK, Mrs. Maryanne Hogan of Peoria, Ill., is sightless and in her sixties. "Polly," as she is known on the air, lost her sight a few years ago and was having a difficult time finding a hobby in which she could participate. An appeal to the Peoria ARC resulted in code and theory classes and a Novice then General Class license. She received much help from interested amateurs and others throughout the country, including the Radio Library for the Blind, the American Foundation for the Blind, and The Braille Technical Press. Polly is constantly amazed at the friendliness and helpfulness of the amateurs she has met and feels that amateur radio has truly given her a new lease on life. K9OHK operates 15 and 75 meters s.s.b., using an HT-32 and an RME-4350 receiver equipped with a braille dial.

W7VWU doesn't usually wear a crown and a gown when she is on the air, but upon being crowned Home-Coming Queen of Eastern Washington College of Education (Cheney, Wash.), Terry Hansen was quite entitled to look as regal as she does here. At present the charming college junior is too busy with scholastic and cheer-leading activities to spend much time on ham radio, but after she gets her degree in education next year she hopes to put W7VWU on the air more often.



Petite Miss Kathy McQuigg, KØLWT, of St. Louis, Missouri, became interested in ham radio at age seven, when she learned to copy code at 5 w.p.m. At 12, she got her Novice license. On her 13th birthday in August, 1958, she passed the General Class exam and has since been active on several bands in accordance with the pressure of eighth grade. Kathy's ambition is a career in electronics.



San Diego grandmother Mrs. Edith Coleman decided that a ham ticket would allow her to talk to her son W9HAT and three grandchildren in Wisconsin. She enrolled in an evening class at a local high school and persevered until the call K6UHI was hers. Her proud OM not only gave her an NC-303, a Viking Valiant, and a Gonsset Tri-Bander plus a four-week tour of the Hawaiian Islands, but he also enrolled in the same high school course himself!



Betty Aylor, W3SLS, now operating portable one at Westport, Conn., got her license as the result of the "influence" of her husband ham. Licensed in 1952 about the same time her first child was born, Betty concludes that after seven years and three children, amateur radio fits very well into her household. "You are confined to the house with the children anyway, and amateur radio is armchair traveling. While ironing, cooking, and cleaning, I keep on the HRO-60 and try to answer CQs, if at all convenient."



CONDUCTED BY EDWARD P. TILTON,* WHDQ

As reported in May *QST*, ARRL filed comment in support of Docket 12728—the FCC proposal to open the 144-Mc. band to Technician Class licensees. The ARRL statement (page 84) is brief; when you file in favor you merely state that you concur in the arguments advanced, either entirely or in principle. FCC's reasons for proposing this move are given in *QST* for March, page 66.

Also in May *QST* is the text of the ARRL filing for reconsideration of the FCC action in Docket 12485—the proposal to set aside segments of the 50- and 144-Mc. bands for c.w. emission exclusively. (Surely everyone connected with v.h.f. knows by now that FCC moved to make exclusive c.w. subbands available, but not at the low edges of the bands, as originally requested by ARRL and proposed by FCC.)

The latter filing is much more involved. When you argue you have to marshal evidence, and go into details. Please go back to page 84 of May *QST* and read the second filing, so that you will know why the request was made, whether you buy the idea or not. The first requisite for successful operation of a democratic system is an understanding of the issues, not an emotional "We want (or don't want) this!" approach.

The ARRL positions on these controversial issues represent the workings of a democratic system. They are earnest efforts to find the best way through a maze of conflicting opinions. There are strong feelings on both sides of both proposals, but unfortunately there is often more heat than brain power expended in arguing their merits. We are not predicting how the issues will be resolved, but as part of a democratic system we are making plans to do the best we can for the future of amateur radio in the v.h.f. field, either way.

The ARRL stand on these issues may seem to some to be a straddle, for in one case the wishes of practically every Technician are followed, and in the other a position is taken that is violently opposed by many Technicians. Actually, if the actions are taken according to ARRL wishes (the comment date has been extended to August 3—see p. 72 this issue) the world above 50 Mc. will have an unparalleled opportunity for growth, in size and in stature.

Everyone expects a boom in 2-meter interest, if that band is made available to Technician operators. It is up to us, and this includes the Technicians, to see to it that this growth is not made at the expense of the gains we have achieved on 50 Mc., and on 220 Mc. and higher

* V.H.F. Editor, *QST*.

50 Mc. WAS

1 W0ZJB	17 W8OGW	33 W0PEP	49 W6FKY
2 W0BJV	18 W7ERA	34 W6BJ*	50 W8LPD
3 W0CJS	19 W3OJU	35 W2MEU	51 W0ZTW
4 W5AJG	20 W6TMI*	36 W1CLS	52 W6GCG
5 W9ZHL	21 K6EDX	37 W6PUZ	53 W2RGV
6 W9OCA	22 W5SFW*	38 W7ILL	54 W1DEI
7 W6Q8	23 W6ORE	39 W6EDX	55 W1HOT
8 W0INI	24 W9ALU	40 W0DO	56 W6ANN
9 W1HDQ	25 W3CMS*	41 K9DXT	57 W1SUZ
10 W5MJD	26 W0MVG	42 W6ABN	58 W1AEP*
11 W1DIZ	27 W0CNM	43 W6BAZ	59 W5LFH
12 W1ILL	28 W1VNH	44 VESAET	60 W6NLZ
13 W0DZM	29 W0LPT	45 W9JFP	61 W7MAH
14 W0HVV	30 W7HEA	46 W0QIN	62 W6ESZ
15 W0WKB	31 K6QGC	47 W0WWN	63 W2BTM
16 W0SMJ	32 W7FFE	48 K9ETD	64 W7ACD

*49

VE7CN	45	XE1GE	30	LU9MA	26	LA7Y	20
KL7AUV	41	KH6CTC	30	ZS8G	26	VQ2PL	18
VE1EF	42	SM7ZN	29	CT1CO	21	JASAO	18
VE2AOM	38	PZ1AE	28	SM6ANR	21	JASBU	17
KH6UK	37	SM6BTT	28	CO6WW	21	J1A1AAT	17
E12W	37	CO2ZX	27	LA9T	21	J1A1AUC	16
VE1HS	41	Z2JVV	26	SM6CNN	20	Z2JVV	12

bands. The nature of this growth is of vital importance. If it is largely an influx of people who lack the urge to progress technically and in operating skill, or people who do not understand the basic responsibilities that rest on the shoulders of every holder of an amateur license, then the doubling or tripling of our v.h.f. population in the next few years that is foreseen by many will have been a hollow victory indeed.

Perhaps a reminder is in order that every Technician gets his license through the cooperation of a holder of a General or higher-class license. When you are asked to help a newcomer get a Technician ticket, bear this in mind. How well you get him ready may contribute to the trend our v.h.f. bands will take in the years to come. Only you can be sure that he will make his start in the game in a way that will reflect credit on his sponsor, and on the v.h.f. fraternity as a whole.

Looking at the second matter, the segments for exclusive use of c.w., it is going to be more important than ever that newcomers to the game have an understanding of the very real advantages of c.w. in v.h.f. and u.h.f. communication. At the current state of the art, at least, no operator can more than scratch the surface of the opportunities for interesting work on 50 Mc. and higher bands without the ability to use the code effectively. Newcomer or oldtimer, we will be doing less than our best for the advancement of the art if we do not see to it that the c.w. bands, when and if they are made available, are used to their fullest extent.

This means more than just using c.w. for DX

This is the group of Massachusetts hams that showed up at the Air Force Cambridge Research Center on Saturday, April 25, to receive IGY certificates for their participation in the ARRL-IGY project. For further details on the project, refer to the article on page 48 of this issue. Pictured here (left to right), seated; Mason Southworth, W1VLH; Gordon E. Hopper, W1MEG; and Dr. Wolfgang Pfister. Standing: George Grammer, W1DF; Joseph Callahan, K1DIO; John Huntoon, W1LVQ; Albert Watts, W1GRT; William Coburn, W1ELP; Donald Brown, W1JSM; William McCormick, W1AHE; Harold Jensen, W1LUW; Joseph Boudreau, W1NMQ; William Rosner, W1RFU; Paul Day, W1PYM; and Richard Bolt, W1DGA. W1VLH was present at the ceremony in his capacity as ARRL-IGY Project Coordinator, while W1DF and W1LVQ represented the League. Dr. Pfister is Chief of the Ionospheric Characteristics Branch of AFRCR.



shots when the band is open. It means setting up your station for c.w. operation, and then using it regularly for that mode. It means answering stations you hear calling on c.w., whether or not they represent some choice new DX, or a state not previously worked. One of the principal arguments used against the proposal for exclusive c.w. segments in the high-priority portions of the bands is that they will be largely unused. Only by frequent and consistent use of c.w., dead band or open band, will the accusation be disproved.

All this is written before we have any inkling of the final fate of the two dockets concerned. This will soon be out of our hands and yours. What definitely does rest with us is how well we will exploit the opportunities these two proposals afford. Amateur radio, and certainly that portion of it concerned with the world above 50 Mc., is not a hobby for people who cannot or will not learn through hard work, study and experience. If we do not continually demonstrate alertness and a sense of responsibility in the use of our frequencies, we could wake up some grey morning and find that we no longer have them.

Here and There on 6 and 2

DX activity was light on 50 Mc. during April, on the whole, but transequatorial circuits showed some life. KH6CTC, Kailua, Hawaii, worked LUs March 29, 1230 to 1300 HST. At 2210 the same night VK4s came through, and at 2250 ZL1AVZ, above 51 Mc. (ZLs now have only 51 to 53 Mc.) ZL signals lasted until after midnight, and then VK9XK was in. VK4 signals were heard every night, March 29 through April 5. Another good South American opening came the afternoon of the 5th, with LU, CX and CE working into Hawaii. The LUs were heard working Cuba, Mexico, Brazil and W4CQP. HC1FS was worked at 1515 HST April 6, and VK4ZBE at 2235. VK4s were in again for 2 hours beginning at 2130 on the 7th. Both Japan and Argentina were in around 1500 HST on the 8th, when these antipodal countries were working each other. VK9XK was worked at 2255 on the 9th. At 2330 Esther was working mobile with a local station, and was heard by VK9XK. VK4ZAX was worked by KH6CTC at 2230 on the 13th.

W4FNR, Ft. Lauderdale, Fla., worked his first African April 3, but it was a crossband QSO. Ab called ZE3JU on 10, switched to 6, and came through in Southern Rhodesia with an 89 signal at 1947 GMT.

Here's a rare one, reported to be on 50 Mc.: HC1FS tells us that FM7WW, Martinique, should be on 6 by now. We've had no reports on him, however. DX note for next fall, if not before: The Finnish amateur society reports that they will have the use of the 50-Mc. band through at least the end of 1959.

Six-meter DX worked recently from Okinawa, as reported by W5SWV, who is also KR6DS: DU1GF—50.245, VK4NG—50.238, VK4ZBE—50.205, VK4HD—50.038, V86CJ—50.09, VU2RM—50.09, VK9XK—50.006, VK4ZAD—50.138, VK6RO—50.145, DU9VVL—50.096, W7YGL/KG6—50.365.

A station scheduled to be on 144 Mc. during the ARRL Field Day that southerners may want to keep a lookout for will be operated by W5KTD, W5ML and W5SUM. They will be on a high hill 5 miles east of Vivian, La., with a 300-foot antenna tower to give them added elevation.

Two more v.h.f. club certificate awards: The Cowtown 6-Meter DX Club of the Fort Worth Texas area offers a nicely printed certificate to 6-meter operators who work their members. Stations within 100 miles of the courthouse in Fort Worth must work 15 members. Stations outside this range need work only 10. This information and sample certificate came from K5BBG, 905 Crestview Drive, Arlington, Texas, president of the newly-formed club.

The Phoenix V.H.F. Club also has a beautiful bill of wallpaper for anyone who works 10 or more of their 50 members. Only contacts made since Jan. 1, 1959 may be counted. Send list of stations worked, giving time and date, to W7GGJ, Secretary, Phoenix V.H.F. Radio Club, P. O. Box 6602, Phoenix, Arizona. Club meetings are held the first and third Wednesdays of each month at Red Cross Headquarters 329 N. 3rd Ave. On other Wednesdays the club net holds forth at 1900 on 50.34 Mc.

Going to the Syracuse V.H.F. Roundup Oct. 10? From the Philadelphia area? If so, you may be interested in a transportation deal being promoted by W3TDF. Ray has taken in these affairs for the past couple of years, and has found them well worth the trip, but it has been a costly and rather tiring business to drive up for a one-day hamfest. He has, therefore, investigated the cost of a chartered bus, and reports that if a full load of 41 passengers can be lined up, the round trip will cost only about \$8.00 per person. This will be in air-conditioned reclining-seat busses of brand-new design. For further information, send a stamped self-addressed envelope to W3TDF, P. O. Box 31, Langhorne, Pa.

What is the upper limit of frequency for ionospheric

propagation? Nobody knows, precisely, and now and then we get reports of reception that indicate that our present ideas about this could be in error. Example: On March 27 at 1520 CST, W5LFM, San Antonio, Texas, heard an f.m. signal with Spanish speech on 151.5 Mc. The signal was in for about 4 minutes. Cal suggests that this might have been the third harmonic of a TV relay station in Mexico City that is heard on 50.5 Mc. whenever there is sporadic-E skip to that area. No 50- or 144-Mc. signals were being received at this time, but this was during a period of violent solar disturbance. Anyone like to explain this one?

2-METER STANDINGS

Figures are states, U.S. call areas, and mileage to most distant station worked.

W1REZ...	30	8	1175	W5NDE...	11	5	625
W1AZK...	24	7	1205	W5VY...	10	3	1200
W1KCS...	24	7	1150	W5SWV...	10	3	600
W1RFU...	23	7	1120				
W1AJR...	23	7	1130	W6NLZ...	12	5	2540
W1HDQ...	20	6	1020	W6WSQ...	12	5	1390
W1MMN...	20	6	900	W6DNG...	9	5	1040
W1EZY...	18	6	875	W6AJE...	3	800	
K1CRQ...	18	6	800	W6ZL...	5	3	1400
W1AFO...	17	6	920	W6MMU...	3	2	950
W1ZJQ...	17	6	860				
W1CLH...	17	5	450	W7VMP...	15	5	1280
				W7JRG...	10	4	1040
W2NLY...	37	8	1290	W7LHL...	4	2	1050
W2XCY...	37	8	1360	W7JUE...	4	2	353
W2ORL...	37	8	1250				
K2GQI...	30	8	1200	W8KAY...	38	8	1020
W2AZL...	29	8	1050	W8WV...	35	8	1200
W2BLV...	27	8	1020	W8PT...	34	8	985
K2IEJ...	25	7	1060	W8LOF...	33	8	1090
W2AMJ...	25	6	960	W8RMH...	32	8	910
W2DOW...	23	6	860	W8SVL...	30	8	1080
K2HOD...	23	6	950	W8SQ...	30	8	1000
W2PAU...	23	6	753	W8LPD...	28	8	850
W2SMX...	22	6	940	W8LJ...	28	8	800
W2CEH...	22	6	910	W8WRN...	28	8	680
W2LWI...	21	6	700	W8BAX...	27	8	960
W2RXG...	20	6	700	W8DX...	26	8	720
W2UTH...	19	7	850	W8LJ...	25	8	800
W2ROV...	19	6	720	W8JWV...	25	8	940
W2WZR...	18	7	1040	W8GFN...	23	8	540
W2ESK...	18	5	850	W8JFH...	21	8	975
K2RLG...	17	6	950	W8LCY...	21	6	610
				W8HLN...	21	7	610
W3RUE...	30	8	975	K8AXU...	19	6	750
W3GKP...	29	8	1020	W8GTK...	18	7	550
W3KCA...	28	8	1110				
W3TDF...	28	8	915	W9KLR...	41	9	1160
W38GA...	26	7	700	W9WOK...	40	9	1150
W3EPH...	22	8	1090	W9GAB...	33	9	1075
W3BYF...	22	6	660	W9AAG...	32	8	1050
W3NKM...	20	7	730	W9REM...	31	8	850
W3LNA...	20	7	720	W9ZIH...	30	8	830
W3LZD...	20	7	650	W9LVC...	27	8	950
				W9EQC...	26	8	820
W4HJQ...	38	8	1150	W9ZHL...	25	8	700
W4HHK...	35	9	1280	W9BPY...	25	7	1030
W4ZNY...	34	8	950	K9AQP...	24	7	900
W4AO...	30	8	1250	W9BPB...	24	8	820
W4MKJ...	28	8	850	W9LF...	22	7	825
W4UMF...	28	8	1110	W9KPS...	22	7	690
W4VLA...	26	8	1000	W9PMN...	19	6	800
W4EQM...	25	8	1040	W9WAL...	18	7	800
W4W5H...	24	8	850	W9CUX...	18	7	800
W4JCJ...	23	6	725				
K4EUS...	23	6	765	W9SMJ...	29	9	1075
W4VVE...	21	6	720	K9EMQ...	29	7	1110
W4IKZ...	20	6	720	W9HHD...	27	7	890
W4OLK...	20	6	730	W9BFB...	27	8	1060
W4AIB...	19	7	840	W9GUD...	25	7	1065
W4CPZ...	18	6	650	W9RUF...	23	7	900
W4TLV...	18	7	1060	W9GDH...	22	8	1240
W4RFR...	18	7	820	W9INI...	21	6	830
W4MDA...	17	6	750	W9UOP...	21	7	900
K4YUX...	16	8	830	W9TGC...	21	7	875
W4LNG...	15	6	1080	W9RYG...	17	8	925
W4RMU...	13	6	920	W9IFS...	16	6	1100
				W9IC...	13	6	1240
W5RCI...	34	9	1215				
W5DFU...	25	9	1300	VE3DIR...	28	8	1100
W5LPG...	25	7	1000	VE3AIB...	26	8	910
W5AJG...	23	8	1360	VE3BQ...	19	7	790
W5KTD...	22	8	1200	VE3AG...	17	8	800
W5JWL...	21	7	1150	VE3DER...	16	7	820
W5PZ...	16	8	1300	VE3AOK...	13	5	550
W5VKH...	15	5	720	VE3RFB...	14	6	715
W5ML...	15	5	700	VE7E...	2	1	365
W5SFC...	12	5	1390				
W5HEZ...	12	5	1250	KH6UK...	1	2	2540
W5CVW...	11	5	1180				

The World Above 220 Mc.

Running the 220-420 box for a couple of months is having the desired effect. Quite a few fellows have written in to say, "Hey — I've got more than X states on 220!" Well, how were we to know? Thanks for sending in the complete and

up-to-date information, gang, and keep the entries and corrections coming. Our first listings had to be incomplete, and often based on old reports, but from here on we will carry only listings that provide the dope we need to make the boxes interesting and useful. You'll note a lot of changes in that direction this month. And say — aren't there more than 9 stations on 420 who have records worth listing? Figures in the box are the states, U.S. call areas, and the distance to farthest station worked — just as in the 144-Mc. standings.

Anyone for s.s.b. on 220 Mc.? The success of the sidebanders on 144 Mc. has led to considerable talk of sideband possibilities for 220 and even higher bands. With crystal-controlled converters the receiving problem should be no more troublesome on 220 than on 144, and the gain in signal-to-noise ratio available with s.s.b. techniques should extend the reliable voice range on 220 at least as much as it does on 144, which is plenty.

One long-time 144-220 man who is going to s.s.b. on both bands is W3LZD, Dunmore, Pa. Ted says that A3 is almost out of the question in his congested neighborhood, at least with high power, and W3LZD has been a gallon man from 'way back. He is converting for s.s.b. and c.w. only, on both 144 and 220.

Ted also passes along some news of interest regarding 1296 Mc. He says that W3ARW has crystal-controlled gear for 1296 Mc. just about set for the W3KX/3 operation in the June V.H.F. Party. We know what's up here: W3KX/3 to W1MHL/1 and W1BJ/1 in New Hampshire has been easy on 220 and 432 Mc. in several past contests. We'll wager that 1296 Mc. is a secret weapon being readied to break the scoring and section-multiplier barrier at W3KX, a leader in v.h.f. contest scoring for years. Remember that W1BJ/1 had crystal-controlled gear at Mt. Kearsarge last September!

Suggestion for high power on 1296 Mc.: W3LZD recently obtained some 6161s on the surplus market. The 6161 is coaxial triode with a 250-watt plate dissipation. It takes its full rating (1600 volts at 400 ma., for c.w. or f.m.), up to 900 Mc., and 71 per cent of this at 1400 Mc. As a grounded-grid doubler, a 6161 should be capable of delivering 100 watts output on 1296 Mc., which should make a lot more noise than the best 2C39 jobs we've had yet on this band. Full operating characteristics are in the RCA Tube Handbook, HB-3, Vol. 9-10.

220- and 420-Mc. STANDINGS

220 Mc.			
W1AZK...	9	3	412
W1HDQ...	11	5	450
W1OOP...	12	4	400
W1RFU...	11	5	480
W1UHE...	11	4	385
W2AOC...	13	5	450
K2AXA...	8	3	230
K2CBX...	8	5	315
K2DGC...	4	3	140
W2DWJ...	13	6	740
W2DZA...	12	5	410
W3ABQ...	4	3	180
W3LCC...	8	5	300
W3LZD...	14	5	425
W3UJG...	11	5	400
W3ZRF...	5	3	312
W4TBY...	7	5	320
W4UMF...	11	5	420
W5RCI...	6	4	700
K6CTG...	2	2	240
W6MMU...	2	2	225
W8LPD...	6	4	450
W8PT...	5	3	550
W8SVL...	5	4	420
W9EQC...	7	4	740
W9JCS...	5	2	340
W9OVL...	5	2	290
W9UED...	4	4	605
W9ZIH...	5	2	270
VE3AIB...	5	3	350
420 Mc.			
W1HDQ...	8	3	210
W1RFU...	8	4	410
W1OOP...	9	3	390
W1UHE...	3	2	430
W2BLV...	11	5	360
W2DZA...	5	3	130
W4VVE...	6	4	410
W5RCI...	4	3	340
W9GAB...	5	-	355

W2DZA, Teaneck, N. J., has had a d.s.b. setup on 220 Mc. for some time. Alex says that results have been good locally, and he is waiting for a shot at more distant stations. So far he has used only a pair of 6AK5s, but an 832 amplifier should be on before this is read.

This should be the year for DX on 220. The past several months have shown steadily increasing interest, and there are good stations well spread over the country. When tropospheric or aurora openings show on 144 Mc. let's be sure that we have activity on 220, and that we know where to look for DX. Most eastern stations operate on the low edge, but there is agitation for 222 Mc. for a national DX frequency. There is no equipment reason why this should not serve as well as 220.01 Mc. (Two megacycles at 220 Mc. will not show too markedly on your antenna

(Continued on page 160)

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

Where?

In times gone by, determined wanderers found it fairly easy to get lost somewhere. The world was wondrously wide and relatively uncluttered. You saved up a small stake, packed your bag, and picked your paradise, your very own "new one." But now? Ah, wilderness — here's what one saddened student of the remote has to report on the demise of an ancient calling. . . .

Exit Beachcombers

As a lover of far, deserted places, I find that one of the most dismaying books I have read recently is a fat tome called the *Official Airline Guide*. If anyone doubts that the world is small, crowded, and choked with exhaust fumes, he has only to look into this book of more than 800 pages of airline schedules in small type.

For example, I have long cherished a place called Rottnest Island off Australia as ideal in name and isolation if I were disappointed in love or running from a posse. But now! For a mere \$7.60 a plane will take anyone there from Perth in 20 minutes, any day of the week. Scratch Rottnest as the end of the world!

The fact is all the far places have become near, the lovely beachcomber islands are overrun with airdrops, the enchanting *vakinas* run dress and curio shops and have no time for *amor*, and the sands are posted with "Private — Hotel Guests Only" signs.

Boro Boro, that beachcomber's vision, is serviced twice a week by air — and a bus, not native carriers, takes you to the airport. Dar-es-Salaam is no longer a place of desperate adventure, ivory trading, and stolen love in a sultan's harem. It is a DC-3 gas stop.

All darkest Africa is lit by the blinking lights of milk-run planes. It is not right that a Viscount should call regularly with traveling salesmen at get-away-from-it-all spots such as Ngulani, Ndola, Bulawayo or Mombassa. But it does — and every day, too.

The same is true the world around, from Bukavu to Goma, from Mossamedes to Dala Does Tigres (what a name!). The truth is there is no longer any place in the world to where a man can escape. Space travel has come just in time.

Before long the last refuge of the bum and embezzler will be the lonely islet moons of Saturn — but that won't last long, either. Interstellar Express will run a local excursion on Wednesdays and Saturdays with stopover privileges, and some enterprising Martian will have a chain of motels, hot dog stands, and Howard Johnson restaurants. Then where will we escapists go?

— Herb Daniels, "The Modern Almanac," Chicago Tribune

This state of affairs bodes well for ham countries totals, however. And there are a few optimists who hold that certain unhabitated refuges still await persistent seekers.

In his recently published *Report from Practically Nowhere* (Harper, 232 pp.) author-traveler John Sack offers a "timely, authoritative assessment

of thirteen of the most unimportant nations on the face of the earth." In addition to such gems as Punial, Sharja and Swat, OM Sack turns up a real cutie labeled "S.M.O.M." The place is presumed to be the world's smallest independence, a sovereign half acre abutting on a Rome haberdashery.

Visas, anyone?

What:

Would that friend Sack toted a ham rig along so he could do up his boondocks bit right, eh? . . . Spring was most accommodating to North American DX devotees from 10 through 80 meters. (We almost froze to death but that's of no importance.) Over-all conditions compared favorably with a year ago on the higher frequencies; 40 and 80 were much improved, and there never has been a more toothsome batch of DX available. As indicated in the "Whence" sector, numerous DXpeditionary undertakings are afoot to help spice up the summer season now at hand. Here's a cross-check of less transitory items recently reported worked, heard, heard worked or heard called by "How's" ionospheric investigators. . . .

20 c.w. interested W1s AZW (151/144), IJY TS YIS (118/105), K1s CDN (129/70), GUD (59/29), V2s CVW GVZ JBL WAZCCC (144), K2s AYC (111/86), RQC (76/61), UYG, W3LOS (93/75), K3AHT, K4s IEX JOS PHY (122/98), PQR RJM, K5s ESW HFT LGH, W6s JQB KG NTR, K6s ALH (119/68), LAE (153/128), LXS ULO, K7s AWH (78/61), CXZ, W8s KX YGR, K8s IOQ (118/90), JZZ, W9s JJJ PJT UBI, K9s ELT (93/60), JJR (83/55), JQA KDL W0EL (154/138), COZUS, IIER, KH6PM, KL7PL, VE3 IPQ (240), 3EIL (76/47) and 7CQ mainly because of BV1s US 13 GMT, USB (60 kc. above the lower band limit) 12, CE0AC (61) of Easter Isle, CNs 2BK 8BK (15), 8BP, CP3CD, CRs 4AX (16) 1, 5AR 20, 7CI 7CR 9AH 12, 9AI, CTs 2AI 2BO (7) 0, 3AB 0, CX1NE (50), DM2s AGH 6, ANG KWN 5, DU3 IDR (40) 13, 6IV 17, EA8s BC BF BK CG (80) 7, ET2s KY VR, F2CB/FC of Corsica, FAs 3DU XXS/sh 22 in the Sahara region, FB5XX (45) 4, FB5CC, FC7s XC XLE, FK8AT, FM7WF, FO6s AC AG AP (30) 3-5, AU (100) 4-7, FQ8AP (30) 3-5, FY7-YF (50) 12, GD3UB (45) 23-0, HA3 1KSA 2MF 5AM 5BU 5DH 5-17, 5KAG 5KCU 5KDF 8KCU 90X 9HN 5, HB4FE (70) 7 of the Swiss military, HC3s 1XJ (6), 3TH 4IE 5HN (69), HH2LD (15), HK3 3TH 8AI of San Andres, HSIC 13, ITU1AL, JAs 1AB 1BAQ 1BLM 1BSO 1CG 1VX 2BL 2LC 2WB 3FT 3SU 3TH 3UI 4CF 5AB 5AF 5AI 7AQ 8AA 8AH 9AA 9AD mostly between 11-13, JTIAB (61)



*4822 West Berteau Avenue, Chicago 41, Ill.



CP3CD of 12,000-foot-high Oruro is one of those rare code-inclined Bolivian DXers. Victor really moves around on 20 meters with his homegrown 100-watt and folded dipole. (Photo via W1ICP)

12-16, JZ0s DA (65) 12, HA, K6QPG/KW6, KA0 2UW 17, 8KW (60) 12, 8RA (50) 12, 9MF (25) 12, 0IJ (30) 12-14, KC0s JC (18) 10, TM (18) 10, KG0s IBB (80) 0, IBO IEM (80) 23-0, 6AAY (40) 12, KJ6BV (80) 3, KM6s BJ BL, KR6s FM FZ 17, GY, KV4s AA (80) 23-1, AQ (90) 13, BO (30) 2, KW6CQ (58) 5-6, KX6s AF CN (20) 12, CO 12, CW, LUIZA of the br-r-r south, LX1DP (25) 21, LZ1s AF (30), KBL 4, UR 4, OA1s AGI FM, OD5s AI (70) 3, CI 6, OQ5s BC (58) 16, IG, OX3s BR RH UD, OYs 1J 7MIL 7, PJ2s ME (33) of Sint Maarten, CP 6, Fernando's PY7AFN, PZ1AM (22), RAEM of Moscow (2) 3-4, SM5WN/LA/p 17, SU1s 1M (30) 2, MS, SV4s KX 2, WP 5, TA3s AA (12) 22, US6 (4) 3-4, TF3s AB KG, TE3s PZ WD 5, WR, UA3s 1KA6/6 11 of the Russian antarctic, 9IDN 9KAG (75) 5, 9KCA 15, 9KCK 2, 9KKU 9YJ, 2DFA 0N 0FR (85) 12, 0FS (49) 11-13, 0KAR 2-3 of Dickason inc, 0KCK (80) 12, 0KOA (65) 14, 0KQB 0KUA 0KCV (40), 0IRQ, UB5s CZ EF KAD LR, UC2s AA AD 12, AR 4, KAC OM, UD6s AM AX 4, FB (25) 21, UF6s AC (45) 4, AE (80) 21, DI 22, KAF 2-4, UG6s AG (3) 3, KAA 22, UHKA6 1-3, UJ8KAA, UL7s JA 13, KAD (35) 11-12, KBR (71), UM8s DX KAB, UN1s AE 6, AN (50) 2, UO5s BM 7, KAA 2, PR (62) 5, UP2s KNP 7, NW 7, UO2s AB AJ 6, AN 5, ASKBR (75), UR2s BU (112), KAE 5-6, KCA, VK7ZZ's potent 100-watt, VK9s AD (50) 20 of Norfolk isle, JG 6, NT 12, RZ (25) of P.T. AK 11, VK8CC (80) 12 of Macquarie isle, VP2s 2KR 3Y 5AB of the Caicos 5BL (22), SK8, 6AF 6LN (50), 7BT 8EC (52) 1, 8EP (41) 1, 9EN, VO2s 2AB (75) 15, 3CF (15) 19, 4KRL 30, 6LQ (51) 2, VR6s IB (83) 7-10, 2DFA 3B, VS6s 1BK 1FZ (16) 11, 1HX 1JP 15-18, 1JW (78), 5JA (95) 12, 6AF 11, 9GN 9OM (50) 0, VU2s AJ (60) 13, AL (80) 1, PS DR 16, JG (75) 1, LL (25) 12, XW8AL, XZ2TH, YA5AR (80) 0, Y4I-DL 11, YO3s CM 5, RI 6, YV4s 4AU (1) 5, 5ABF (61), 5AO (80), 5EZ (20), 5GO 4, ZB6s 1FA 23-2, 2I (31), 2R 12-13, ZC4s AM 16, LL (65) 22, P 23, ZD6s 1CM 2GUP (16) 6, 6NJ 78A (20) 0-2, ZE6s 1JY (40), 3JO (60) 15, 8JB, ZK4s 1AU (11) 6, 2AD (52) 4, ZM6AR (30) 4, ZP9AY, ZS99Y, 3V8AC 23, 457NG (71) 1, 4X4s GY JR (10) 2, KF KA, 5A5TO (82), 9GICF 21 and 9M2FR (46) 16.

20 phone probes are modest this month but Ka 2SFA* 5ESW 6RAH 9JJR 9KDL, CO2US (106) worked, VE6s 1PQ* (about 100 worked on sideband), 3E1L and CO2-US (106) come through with CN8JF, CR6AK, HH2JK (190) 1, HL2AM (285) 11, KA6s 2D1 (75) 5, RAR, 0CG (104) 6, 0IJ (165) 15, 0IM (190) 15, KCU4NH (270) 7, KG6s 1F1P* 1FR 5, 4AL, 6AFA (160) 7, KR6AM (185) 16, UC2KAB (155) 21, UQ2AJ (190) 5, UR2s BU KAA (180) 5, VP2s 2DX 3HAG (155) 3, 6FO 4, 7CA 9E1 4, 9H 3, VS1s GZ (130) 15, JG (125) 15, W4JRD/KSA, XE1JK, VO8CV (160) 22, 9GIBQ* (305) 0 and 9M2DW (125) 15, the sateriaka denoting single-sideband protagonists.

15 c.w. snarls under the stinging r.f. of W1s AZW IJY TS, K1s CDN GLD, W2s BVE CWV ETU (74/43), HTH, K3DPD, K1s IEX OTG/6 PHY (122/98), RJM TEA VJD/3 (48/16), K5s ESW LGH MHG, W6KG, WA6CPI, K6s LAE LXS OPT, K7s ARV (111/78), CZX, W8YRG, K8JZJ, W9s JIN ZTK (49/25), K9s ELT GDF GSG ISP JJR JQA JZJ, W0E1E, K0s OVR PFE, VE6s 1PQ 3E1L, KHP6M, 1IEE and CO2US whose dipolemates to Jeeves specify 21-Mc, code activity by BV1USB (50) 8, CN2s 2AY 2BK 8OE (26) 18, 8IE (100) 18, CR5AM, CTs 1UF 2AI 3AR, CX7CO, DM2AG 18, EAS 8BP 9AP, ELA 1K 4A, ET2VB (50) 19-20, F9QV/F (75) 20-21, FA9VE, FG7XE (90), 19, F08AC (60) 7, GC3HFE, HA6s 1KSA 15, 5BI 8QG 8WS, HC1LE, HH2HB, HS1s C 20, SD, IS1CXF 19-20, 1T1s AAG 2, GO, JA6s 1GC (40) 15, 1WV 3AF, K6TSQ/KG6 (50) 22, KA6s 2BE (50) 15, 2CB 8KW, KG4S (28) 20, KG1s AQ (15) 15, LEM, KH6CH/KG6, KM6BL (10) 3, KR6s AK B7, KX6s CO (80) 21, CW, LJ2F (35) of Norway, OA1AGI, OD5CI 10-20, OO5s CP 2, HU IG, PJ2s CE ME, SM5WN/LA/p, SPs 2CO (30) 13, 2EQ 3PL 9RF, SV0s WP (25) 22, WY, TF3KG, UA3s 2KAW 9DN (50) 3-11, 9KHA 9OI 9V 0KAR 0KSA, UB5s KCF LR MF, UC2s AA AX (48) 17, UF6AB (48)

20, UL7s GL (60) 9, JA (45) 3, UO5AA (60) 15, UP2KCB, UO2s AN AS, UR2s KAA 15, KAE 15, KCA KCB, VE6NI (50) 11, VK9XK, VP2s 2GD (90) 13, 3AD 4KR 5FP 7BT, 8CV 9BO, VO2s 2AB 3CF 4FM (40) 12, 4GQ 21, 5EK, YR1B (67) 3, VS6s 1EB (57) 15, VS9s AD 40, MB, W5BD/mm off the Azores, WA6BRB/mm near Mexico, XE6s IAX 4, 2OK 0NHID (10) 23, 0PRR (70) 8, XZ2TH (25) 18-19, YO3ZA (90) 14, ZC4s IP 20, RP, ZD7SA (45) 2 and 23, 3A2AD, 487s AB NG (47) 0, 4X4s BB DH JR JU LH KK (80) 5, 5LWP/mm, 5As 3TQ and 5TO, Summer's 21-Mc, prognosis is arrived at by K4VJD/3: "This much is predictable: It will be unpredictable." How true.

15 phone fits the same forecast, naturally, and already is easing off. K1CDN, W2KKT, K2s RQC 8FA*, K4s IEX, PHY TEA, K5s ESW LGH, K6s LAE OQT, W0JLH, K9s GSG JJR JQA and CO2US do this month's reportorial honors with AP2AD 5, CO5CN, CX1NE, EA8CF, ELA 3A (230) 3, 0K, FG7XE (202) 14, HG1s AGI 3, IF, HH3s 22 5RL, HK1EQ, HL9KS (315) 6, HP1LM, JA4BB, K6QPG/KW6 (320) 5, KG4AM, KJ6VB (370) 6, KR6CG (215) 4, KX6CM (346) 5, LX1DE (170) 14-15, OE5HE, OD5AB, SV1AE, TG6s 7AB 9FS, TE2AB, TF5, WD1P, VP6s 1OLY (210) 17, 2DA 2SL 3MG TAB (230) 4 of the Caicos, 5FV 6ZX 9ES, XE6s 1AAH 2CY, XZ2SY (180) 19, YN1s ARM HW SV (218) 4, YV5AEC, 3V8AO and 5A5TO, this (*) indicating a.s.b. work.

15 Novice dipolemates are numerous. Perhaps the lads are taking our advice to make DX hay while the sunspots shine. Anyway, WV2s BQX (16 continents, 4 continents), CJO (15 and 4), KN5TTE, KN6s RMJ TUN, WV6s CPI (now a WA), CRQ, KNTGCK, KN8NHC, KN9s REV and RKF (now N-less) keep busy with CE1AD, CN8JX, a flock of DLs, DU75R, F3EG, GC3HFE, GMs 3DUM 6RI 8FM, HB9E1, JAS 2JW 3BP 9FV 9GC, Ks 2IVJ/VE6s 6T8Q/KG6, KG4AL, KL7FA, KM6BI, KR6BF, KZ5LN, LA3DB, LU9DL, LZ1KNB, numerous OH OK and ON4 trophies, PY7AN, SP1s 5AA 7HX 8HR, SV8WAE of Rhodes, UA5s 4LE 0KFG, UB5LR, VKs 1RG 4FE 5NO, VP6s 5KS 9EN, VS1GZ, W5FNB/KL7, WH6s DAK DRE, W7s CRJ CRZ CUW, WP4s AOD APN AQB, WW6W of Wake Island, XE1s AA AAH, YV5BF, ZC4IP, a quantity of ZLs and ZS8AQ. You don't necessarily need a beam, either, for we note that much of the preceding was worked with nondescript long-wires and lowly dipoles.

40 c.w. will remain alive right through the static season for those who thrive in the barrage. W1s IJY TS, K2A1A, K3AHT, K4s MOF RJM, K5s ESW JVF, W6KG, K6DVB, K7s CAD (14/6 on forty), CXZ, W9s JIN PJT, K9s ELT KDL, W8QGI, CO2US and VE1PQ braved the crackles for CO2s QR (3) 3, US WL, CT1TT, DLs 1G1TSV, EAS 8BF 8, 9AP (2) 5, EI9N, F9QV/F, GSG, HH2HB (2) 11, JA6s 1AEA 1APD 1BF 1BS 1BXF 1BXS 1BZS 1CKD (8) 11, 1LR 1PS (4) 11, 2BS 2WJ 3AF 5AI 6YB 8AE, KG1AQ, KM6BL, KR6s AK BF, 0E8KI (4) 1, OX3AN, SL3AG of the Swedish military, TG6AA, T12PZ, UA3s 3DR (5) 0, 0KCK 0KFG K1A 0LS, UB5ZE (1) 23-0, UO5UT, VESAY of the far north, VK9XK, VP6s 5FP 7BT 9BO 9CB 9B2s CC DA DK, XE2s HU 3, OK, YOTEL (5) 1, YV5HL (11) 10, quite a few ZLs and 5A2CV (5) 0, ... On the 7-Mc, phone from CO2US and K4MOF account for CN8JE (100) 8, EA8CF, G3BID, GW4CF, TF2WCY, VK2ID, W4JRD/KS4, XE1ZZ (100) 8 and ZL3ID. ... Forty-meter Novice DX-hunters are on the increase if we can judge from communications filed by WV2s CIA CJO, KN5QWR, WY6-CRQ, KN9s REV and RKF who made off with K1s CE4 DKA 9, KL7AIZ, VK3B 8-9, WH6s DBF 9, DDB 9, CVD 9, W7LCYN and WP4AOV.

10 phone fans W1PRR, W2JGF, K2s ALA RQC, W4YQW (140/128 on the band), K4s IEX JOS KSV, K5s ESW IIX LGH, W9LXW, K9s JJR JQA, W0GQI (234), CO2US and GC2RS swept up CO2DD 13, CP1CD, CR7s CO EO, CTs 1GJ 1IW 14, 2AC 2AL, CX1AK, EA8CM,

FA2VB, FF8BL, FM7WQ, FO8AX, G2CRS, HA9OZ, HGRY, HH2s CL Z (45) 20, HPIAC, HR2MT, JA4HM, KQPG/KW6 (845) 21, KA8s 2UF 0CT, KR6s CG CS DB DS DZ, KX6s AF CM (805) 21, KZ5US, OD5BN, OE2IE, OQ6s 5NC 9PD, PJ2s 2AQ 2CE 3AG 21, SP6DT, SV0WB (300), TI2s CMF OE PL, UAs 1CK 6KOB 9CM 0KKB, UB5KCA, UQ2AB, UR2BU, VS6s BB NH TO, VK4s CR EL FH MF, VP1s 1RL 2DA 2LO 2LS 2SL 5AB 5CB (490) 22, VQ6s 2JS 2RB 2SB 4RF 5FS 8AV, VR2BC, VU2CQ, XE6s 1AE 2BM, XQ8AG of Chile, XW8s AL AM AN AO, YN4s CB DLS (400) 22, HC 0, YO2KAB, YS1s IM (400) 23, O, YV5HL, ZB6s INR 2A, ZD6s 2CKH 2GUP 6DT, ZEFJK, ZK2AB, ZL1s 1ASF 1LY 2IL 2PS 2UD 3HA, ZP5JA, 4X4s K1 and JK. WPNN was aroused by our s.s.b. inquiry on 28-Me. DX. He finds the medium quite productive in "the world's worst QTH," scoring with CO2YZ, three DLs, HGIAT, KB6BK, KC6AO, KGs 1DT 6FAE, KM6s BH BL, KX6BP, VE2AGW/VE8, W6NGG/KL7, ZS6s 1FD and 6AHW. Roger uses a Heath SSB-10 to drive his Viking II, the latter modified to his own specifications.

10 c.w. hangs on desperately as the m.u.f. slides downhill. W1UY, K1s CLN 3TD, W2s RVE CVW (400), K2s RQC UYG, ZW, K4s MOF RJM, K5ESW, W6K6, W8s KX YGR, W9PJT, K9s ISP JJR JQA JZZ, W0DEI, CO3US and IIR grabbed CE3AG, CN8JE 19-20, CT2AI, CXs 1NE 2AZ 2BT, E19N, ET2KY 16, F08AC, FQ8AP, HA5 5BW 5KAG 5KDQ 18, 8WS, the tough little 7-watter of HB9XA, HICJN, HK5SG, HZIAB, IT1PA, JA5 1BKV 0, 1VX 2BL 23, 2YT 33, 3JM 0, KQ6PG/KW6, KG1AQ, KM6BL, KR6AK 23, KX6s AF CW, OA1FA, OE1LE, OD5CT, OH9NG 18, PJ2s AX ME, SP6s 6JU 8CK 9DT, SV0WP, TF3PI 16, UAs 1TQ 6LF 9SB 0CI 1, 0CN 0, 0KFG 0, 0K1A 00M 2, UC2AX, UQ2AS, UR2s KAA KCA, V55QR 3, VP1s 2LO 5FP (10) 23 of Turks, 7BT, VQ2GW, XE2OK 23, YV5AEA, ZC4IP, ZD7SA 23, ZL1s 1ATF 3, 2AXU 3, ZP9AY, 4X4GM and 5A3TD 16-20.

80 c.w. closes our "How's" Bandwagon trek for this month in the absence of 160-meter advices. On 3.5 Mc, we find W1s TS YLS, K2IDDK (26 on 80), W6KG, W9PJT and K9JZZ crashing the atmospherics for DL3DL (20) 5, E19J, GMSHLQ, GW3MXC 3, JA3JM 12, KH6s AFIAYG II MG 8, KM6BL 10, KR6AK 14, LA6U (1) 5-6, OK2LS (15) 5, PY7AN, SM8YF/mm off Curacao, SP3DG, W9KLD/KL7 8, XE2OK, YU1FYZ (5) 5, ZL3s JT and QX. Good show!

Where:

Europe — "Received my DL4IJ ticket on the 5th of November, 1958, and I believe they reissued the suffix too soon. Just received 43 QSLs from the local bureau for the fellow who signed DL4IJ in 1956 and '57. Sure would like to keep 'em; there's rare DX in that batch! If the operator concerned will forward me his present address I'll see that he gets these cards." The address for the current DL4IJ appears in our February '59 column. And a plea to licensing authorities to let call signs cool off before reissuance appears in our June

1958 offering in large-type type. S.w.I. A. Rugg of Quebec identifies G3ATH as a former ZB2A and DL2XS operator in addition to the info to follow. F7CV (W4ZJY) assures 100 per cent QSL for his Continental DX work in due time. K3DDPO reminds us to remind you that Hungarian stations often receive cards through Central Radio Club, P. O. Box 185, Budapest IV. That LJ prefix mystifies many. It's used by Norwegian school, military, etc., installations and the Norwegian Radio Relay League can guide cards in. "SM5AHK surely is a snappy QSL manager for SM5WN/LA/p. Got a card back in eight days after QSO by supplying enough IRCs for self-addressed air mail." So applauds WIAZW. K4JYQ reports UO5AA catching up on things in the QSL department. IT1TAL, doing confirmation duties for IT1ZGY's Pelagian Islands project, wants s.a.e. for direct reply and will answer other applicants via bureau. K2SFA reports the closing of TF5WDD in mid-April for return to the address that follows. LZ1AF, via K2UYG, pleads for patience concerning his QSL backlog now estimated at 1500. Dimiter claims that Radio Sofia duties keep him hopping.

Asia — W0ZEN had hoped to arrange QSL services for AC4AX so that he could be more active, but Tibetan political developments have obscured the outcome of Floyd's effort. BV1USB's QSL route is sought by W3JKO. "He gave me 'APO 140, San Francisco,' but my card made the rounds with a lot of notations on it to the effect that there is no such APO." "In thirteen months as KA2BE I've gathered some 1200 QSLs. I return to K8BH1 now after striving to QSL 100 per cent from Japan. If anyone has been missed he should rapply at my home QTH." Bud also signed KA3s BE and GG for spell before becoming KA2BE. W8NYG writes from Korea and HL9KJ, "There has been bootlegging of HL calls including HL2AM and we'll try to keep the gang posted on such developments." OD2AA and 3W8AD are one and the same faker, according to Michigan observer M. Eilers who now awaits KN8 credentials. WGDXC hints that W5KF may be of assistance in running down HZIAB verifications. XW8AL assures WIPRR of thorough QSL intentions.

Africa — CR4AX and VQ4AQ are additions to the rambling roster of W2CTN QSL-service clients appearing on page 74. May QST. Jack emphasizes the necessity of self-addressed stamped envelopes for his favors and also points out that QSLs are available only after receipt of appropriate log transcripts from the DX stations concerned. "Any delay in contest QSLs comes about because most contest logs are shipped to me via surface mail." Incidentally, Jack's local Post Office branch is changing location to a point only 500 feet from the W2CTN shack. Logistical necessity? The V-P (Mass.) DX Club stresses the self-addressed envelope requirement where W6EWB's ZL33E QSL services are concerned. The Masken QTH heretofore associated with 3V8AC is declared invalid. WA2CCC suggests you try the address in the list that follows.

Be there a ham with soul so dead who never to himself has said: "What a spot for Field Day!" W6PHF (FO8AW) recently dropped in on FO8AC at Papeete and snapped our QTH of the Month, one truly DXotic. That's Georges bidding welcome.





Ten-meter specialist 9G1CO uses a homespun sender, AR-88 receiver and two-element spinner with telling DX effect. Dennis is acquiring a sterling QSL reputation for his Accra activity. (Photo via K2POO)

Oceania—Also add KW6CP to that W2CTN QSL-agency rundown. . . . "I had a QSO with KC6JC on April 7th and he described how a load of mail and other cargo had to be jettisoned by a Truk-bound aircraft in distress. Cav suspects that many QSLs destined for KC6JC were lost and that some of those who mailed cards to him preceding that date may have to try again." This from W3JKO. . . . "Regarding bogus KH6SS/KS6, K6LKV returned QSLs to senders where s.a.s.e. were supplied and notified the remainder via hamgrams. . . . More about ZK2AB's hurricane harassment as mentioned in "Whence" last month, this from Chas. via W6ZEN: "I feel rather badly about the lost and destroyed QSLs. What with pirates using my call and other complications people are going to feel that they never will get cards from me. I'll try to figure out something to fix things up, possibly with your help." . . . K6MBL advises, "My operations on Midway will come to a halt after one year and nearly 9500 QSOs. I'm due to depart in early July for reassignment in the States. In view of the fact that my next QTH won't be known for some time I request that all correspondence and QSLs be forwarded to K6GZN." . . . WGDXC advises that VK5-AB handled QSLs for J20PC and the former J20PB—can't help you on the present PB. The Gulf gang's DX Bulletin also states that WSUX's VS4BA logs cover the period March 1958 to March 15, 1959; s.a.s.e. and full QSO data in GMT are musts. . . . K8CFU is told by VK2ANB (ex-VR3A) that Ray will have his Fanning logs and cards available soon for liquidation of all VR3A QSL debts.

Hereabouts—K4K4D is astounded at the number of DXers who slip up when converting their local times to Greenwich. Check your GMT status by cocking an ear to the automated timechecks of WWV, lada. Ev also comments, "As usual in those brawls, I received a quantity of cards from fellows who 'thought' they worked me in this year's ARRL DX Test—but didn't." . . . K9ELT's card to "XE5A" via XE1DY bounced like a K9 off a hot soldering iron. . . . OA4FA shut down temporarily while arranging for the addition of a fifth harmonic. K2AYC finds Jorge some 400 QSLs in arrears but his intentions are honorable. . . . PJ2ME, via K2AYC, reports that 700 Sint Maarten verifications recently headed Statesward. With K2SWZ's valuable assistance Vince hopes to clear up his QSL debit and soon. . . . K2POO, like many others, includes photos with his important outbound QSLs and he's convinced that the personal touch pays. Jack's 76/70 batting average would seem to bear this out. . . . The GSXS writes, "Reference my QSL management for Ronald Pinder, VP8-EG, of Signy Island, South Orkneys, I have been receiving considerable mail via an old G8KS address with considerable delay." The Call Book's spring number has the proper QTH. Further from G8KS: "I endeavor to maintain a weekly schedule with Ron at which time he passes to me the calls and reports of the stations he has worked during the previous week. The usual postal arrangements will apply for overseas amateurs." Meaning, of course, the inclusion of IRCs and s.a.s.e. for direct reply, others going via the bureau route. The first batch of G8KS-handled VP8EG pasteboards went out early in April. . . . W8KX is given to understand that some perversity has arrogated the FB8AC call from time to time. . . . K6BX feels that fellows who do QSL favors for overseas DX should keep close liaison with Jeeves & Co., especially when terminating their services. (In self-defense they usually do!) Long-term arrangements occasionally require repeated listings in our directory because they're necessarily "unofficial" and so rarely picked up by the Call Book. Keep us posted, if you will, Samaritans. By the way, Ks IGUD ZUYG and IRL volunteer their services as QSL agents for deserving rare DX. . . . JDXRC reminds us that Argentine outpost suffixes go like this: ZA ZG, South Orkneys; ZC ZO, South Shetlands; ZD ZE ZF ZK ZP ZU ZY, Grahamland; and rare ZY, South Sandwich. . . . NCDXC learns that the call PJ2MB has never been assigned. Sint Maarten legitimates now include PJ2s MC Mea and MF. . . . K6LAE finds that VP5AB of Santa Ceas

responds direct on receipt of two International Reply Coupons. . . . Help yourself to the month's agglomeration of new and/or revised postal pinpointings:

AP5HO, I. Ameen, 8 Div. Sig. Regt., Quetta, W. Pakistan
CR4AX (via W2CTN)
CR9AI, J. Maria, P. O. Box 233, Macao (or via HKARTS)
CR9AM, M. Sousa, P. O. Box 111, Macao
EL4A, Ken Bale (W7VCB), LeTourneau-Liberia Ltd., Roberts Field, Liberia (or via W7PHO)
ex-EQ8FM (to ET3FM)
ET3FM, F. Murphy, 9432nd TU Comm. Unit No. 3, APO 843, New York, N. Y.
ex-F7AY (to W7LBN)
FM7WP, A. L. Petie, Paradise, Fort-de-France, Martinique
FO8AX (to WA6DFH)
FP8AB (to K2JGG)
FY7YE (via W5JLD)
HC1SK, P. O. Box 69, Quito, Ecuador
HC1XJ (via K8CZJ)
HC4IE, Box 30, Manta, Ecuador
HC5TL, P. O. Box 1366, Cuenca City, Ecuador
HH2HB, Box 235, Port-au-Prince, Haiti
HI8GA, G. Abbes, Box 900, Ciudad Trujillo, D. R.
HI8SG, Diego Jarcos Soto, P. O. Box 892, Cali, Colombia
HL9KJ, Dec-RD-IDC, APO 301, San Francisco, Calif.
HP3CC, Box 167, David, R. P.
HS1E, Box B, APO 74, San Francisco, Calif.
IT1TAL, D. Marino, Box 300, Palermo, Sicily
IT1ZGV/jp (via IT1TAL)
JASAI (via K2QXG)
JY7YE, Bohous, Box 369, Ulan Bator, Mongolian Peoples Republic
ex-KA2BE (to K8BGJ)
ex-KA5CW (to W8GMX)
KG1AQ (via W6UED)
KG1BG, APO 23, New York, N. Y.
KG1FD, Box 204, APO 121, New York, N. Y.
ex-KM6BL (via K6GZN)
KW6CP
OE1WG, W. Galia, Wien 21, Slingerdorf 1, Austria
ON4KT, C. Ted Teeddale, 57 rue Theodore Roosevelt, Brussels 4, Belgium
PZ1AM, A. Meubelman, Box 12, Coronie, Surinam
SU1MS (via W6QNA)
SVWVC (via SV1AA)
TA9UB, APO 221, New York, N. Y.
TF3PI, P. Grimal, Laugaveg 54, Reykjavik, Iceland
ex-TF5WDD, 1314 W. Cypress, Pensacola, Fla.
UA3GI, Eugene Kondratiev, Post Box 491, Moscow, U.S.S.R.
UA9AA, Radio Club, Chelyabinsk, U.S.S.R.
UO5AA, Valentin P. Glushkov, P. O. Box 1, Kagul, Moldavia, U.S.S.R.
VE2AUU/VEE, M. Epstein, c/o Federal Electric, Montreal Airport, Montreal, P. Q., Canada
VK9AD (non-W/Ks via VK5AB, W/Ks direct)
VP4DW (via KV4AA)
ex-VP5CP (to VE1PV)
VP5KS, U.S. Naval Facility, Navy 104, FPO, New York, N. Y.
VP8EG (via G8KS)
VP8EP (via G8JAF)
VP9EI, F. J. McClure, Oleander Corners, Middle Rd., Paget East, Bermuda
VQ4AQ (via W2CTN)
VQ4RF (via RSGB)
VR1B, ex-VK1AC-VK8AB (via VK2EG or WIA)
et VJ, J. Baty, VK2ANB, Lot 9, Samson Rd., St. Ives, N.S.W., Australia
VS4RA (via W5LX; see preceding text)
VSSAD, P. O. Box 124, Seria, Brunei
VSSJL, c/o BPM Ltd., Seria, Brunei
VS6BJ (via HKARTS)
WIUDX/KH6, J. Greal, Qtrs. t-351, Ft. Shafter, APO 958, San Francisco, Calif.

XE#NHD (to W9NHD)
 XW8AO, Marion Heinze, USOM-I-PEO, Box L, Navy 150,
 FPO, San Francisco, Calif.
 ex-XZJHP-VS7PH (to G3ATH)
 YA5AR, Box 13, Kandahar, Afghanistan
 YN1LC (via YN1LB)
 ZB1FA, Sgt. R. Conway, ComCan Signals, Sqdn. A, BAPO
 512, Malta
 ZD3E (via W8EWB)
 ZD7SE, P. O. Box 94, St. Helena, South Atlantic
 ZE8JB (via R5SR)
 ZM6AR (via ZL2LB)
 ZP5MQ, F. Novinger, c/o U.S. Embassy, Asuncion, Para-
 guay
 ZS4TA (via SARL)
 3V8AG, Ali Guediche, Radio PCE, rue Pasteur, Sousse,
 Tunisia
 4S7FJ, F/Sgt F. Johnstone (G3IDC, ex-V81FJ), Sgts.
 Mess, RAF Staging Post, Katunayake, Ceylon
 4S7FM, RAF Ekala ARC, Katunayake, Ceylon
 5LWP/mm (via CX2BT)
 9M2MA (via V81HU)

Your benefactors in providing the foregoing are W1s
 GKK PRR TS UED, W2s GRD HTH JBL JGF KKT,
 WA2CCC, K2s IBW SFA UYG, W3s BCY JKO, W4JIL,
 K4s IEX JOS JYQ KSV MOF PHY TEA VJD/3, K5s
 ESU IIX MHG, W6s HOC JQB KG NTR PHF, K6s ALH
 LAE OQT, W8KX, K8CFU, W9s JIN LNO K9s ELT JQA
 KDI, W0GMI, K0s OVR PFF, KH6PM, KL7PI, VE3EIL,
 WP2AB, A. Rugg, DX Club of St. Louis, Northern California
 DX Club, Southern California DX Club, VERON
 (Netherlands) DXpress, V-P DX Club (Mass.), West Gulf
 DX Club and Willamette Valley DX Club. Got fresh
 "Where" data to help the boys along? Flip us a slip with the
 tip.

CAUTION

Under this country's treaty obligations and on
 formal notice received from other nations, FCC-
 licensed amateurs are warned to engage in no com-
 munications with stations in the countries listed
 below. This is in accordance with FCC Public
 Notice of December 21, 1950 (p. 23, Feb., 1951
 QST), and as since revised.

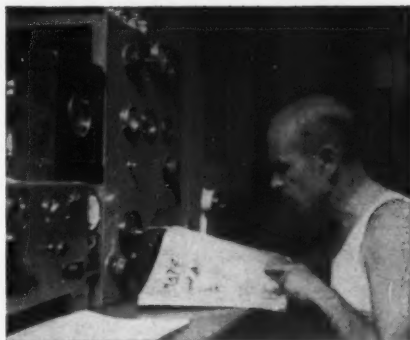
Cambodia (XU), Indonesia (PK, YB-YH), Iran
 (EP-EQ), and Vietnam (XV, 3W).

For those whose QST files do not go back to
 1950 we will gladly supply, upon request, literature
 describing the circumstances of this prohibition.

Whence:

Asia — VERON of Holland rather shakes us with the in-
 telligence that 9N1s AA, AB, AC, and AD are reported li-
 censed in Nepal. . . . HL9KJ is a fresh Korean entry op-
 erated by W8NYG (ex-SV0WX-KR6MN-SV0WD) and
 W9ACC (formerly portable-KL7-VER) around 14,170 and
 21,255 kc. on phone, 14,040 and 21,060 on c.w., with an

UA3FM and very-YL Carol occasionally try their phone
 luck on the North Atlantic path near 14,100 kc. (Photo via
 W7DJU)



EA6AW is famed as a 14-Mc. c.w. regular among the
 Balearics gang. Arcadio's informal attire is just the thing
 in Palma de Mallorca, prime Mediterranean holiday
 resort. (Photo via W1PH)

Elmac 50-watter W2HTH, through K9GDDQ,
 tells us of AP5B/YA's planned mid-May 21-Mc. activation
 XW8AK booms through on 28,325 kc. around
 1600 GMT for K5IIX at rare intervals. Neighbor XW8AL
 works the same band from 1300 to 1600 and a couple of other
 XW8s concentrate on 28 Mc., too. With ten softening up for
 the summer these Laotians may slide down to 15
 The 487 gang wasted no time in firing up after the lifting of
 Ceylon's temporarily imposed hamming prohibition and the
 return of impounded gear around April 1st. W2HTH helped
 487NG celebrate the event on 15 c.w. while 4S7FJ spread
 the good word on 20 VU2BK tells CO2US of the
 South India Phone Net that holds forth around 7095 kc.
 Such local lights as XZ2KM chime in New liberal-
 ized ham exams commenced in April out Japan way. K6DV
 notes a consequent booming of the morning 7-Mc. JA popula-
 tion KA2BE comes back to K8BG1 after a pleas-
 ant 140/111 Tokyo DX career. "Nailed all states but South
 Carolina. Just couldn't seem to hook that one, even in phone
 and c.w. ARRL Test sessions. I must thank the gang for all
 the enjoyable contacts and I'll be seeing them from Wright-
 Patterson Field." Bud is anxious to try a triband cube
 quad as K8BG1/8 Asian gleanings via DXCSL,
 HKARTS and VERON: MP4BCN (ex-ST2NG-ZD3G) ex-
 pects to try his DX luck from Qatar and other near-by areas
 from time to time. TA3s AA and USB are talking
 Turkey on 20 and 15. V86CO leaves Hong Kong for
 the U.K. and possible Canada relocation. Colleague V86DL
 also departs the Orient and expects a tour of DL2 duty after
 his British holiday.

Africa — VQ4AQ interests W2CTN with these porten-
 tuous words: "In 1960 I will be on six months leave. I am hop-
 ing to call at such rare islands as VQ7, VQ9 and any others
 which I can make en route — Mafia, Zanzibar and the
 Comoros. It's a long way off; I will let you know further
 details when the time draws nearer. VQ8AB (ex-VQ8CB)
 works in the same department as myself and Lenny knows
 quite a few commercial operators on small motor vessels who
 are interested in ham radio. We have been in touch with
 some of these chaps, hoping to get them to come out by air
 as amateurs from such rare islands as Agalage, St. Brandes,
 the Aldabras and other places in the Indian Ocean."
 EA3GF mentions probable Ifni maneuvering by EA3IS and
 buddies next month Ex-FM7WT advises K0DQI
 of his imminent French Somaliland activation The
 ET3FM now frequenting 14-Mc. c.w. and phone regions in-
 forms WIGKK he signed EQ3FM in 1949 and '50
 K4ALH finds ZESJO interested in possible early ZS4O
 action W2CTN notes that 9G1BQ gives 7-Mc.
 s.s.b. an occasional whirl Neighboring 9G1CF
 heads home to England this month, according to WA2CCC
 From K2UYG: "VQ4ERR writes that his plans for
 a Seychelles DXpedition are definite and he sails for VQ9
 on August 17th to arrive the 20th, target fire-up date the
 21st. W7VCB pushes buttons at EL4A these days.
 "I hope to be on 20 and 40 with a kilowatt, lower power on
 other bands. I'll be traveling a lot but I expect to help put
 Liberia on 80 and 160, too. Will also check on Togo and Por-
 tuguese Guinea possibilities." CR7BN publishes an
 ambitious *Manual do Principiante* (Novice Handbook) with
 24 pages of DX data — prefixes, countries lists and the like
 — also describing the WCR7A (Worked CR7 Award)
 Snippets from VERON and WGDXC: VQ8AD,
 active on 15, also schedules FR7ZC regularly near 7030 kc.
 ZD9AB likes 14,185 kc. from 1800 to 2100 GMT on

Mondays: ZD9AF uses 10 and 15 between 1600 and 2000 when duties permit. . . . EA0AF regularly appears on Sundays around 14,055 kc. at 1630 GMT. Near-by EA0AB likes a shot of 10 phone on occasion. . . . ET2 KY and US intended to follow their planned FL8 operations with a spell of ET3 fun.

Oceania — Tarawa's VR1B (VK3IB, ex-VK1AC-VK6AB) haunts the low edge of 14 Mc. around 1000 GMT and tries 28 Mc. at 2300. W6NTR observes that Chas. is a cagey one, listening for his own DX and pouncing on it before pile-ups develop. . . . W9EVI, now up to 240 after his KS4BB adventures, noticed CR10AB knockin' 'em dead on phone around 21,240 kc. with a solid 3-element-type signal. A few of the Darwin VK3 brethren would like to try their hand at such a Timor trip. . . . KH6OB has a fine chance to make good on ZM7 aspirations, according to W9EVI.



KR6MI of the Third Marine Division at Camp Kinser keeps liaison with numerous Stateside stations on 15 and 20 phone. Here chief op Vince schedules K6DG while sidekick Jack revises the posted sked list. KR6MI's traffic commitments naturally are interspersed with lively "first KR6!" onslaughts.

Mac also notes that Lord Howe's VK2FR is back at it with potent a.m. around 14,125 kc. . . . "VR6TC is in New Zealand for six or eight months to receive medical attention for chronic appendicitis," notifies W4TAJ. "Tom will return to Piteam in early 1960." . . . W1CED relays W1UDX/KH6's offer of skeds with Fort Shafter on 15 and 20, phone or c.w. . . . K5JVF was ZL1AF's first U.S. Five on forty. Dave also reports a new Fiji 7-Mc. convert, VR2CC. . . . VK5FM tells W8XX of his interesting BC-station duties at Crystal Brook. . . . "I worked nearly 9500 stations since commencing Midway operations a year ago. WAS, WAC, DXCC and WBE have resulted." This from KM6BL who soon will be signing a W/K/WA-type call. . . . K7GCO reports that ZL3VB's Chatham's operating opportunities are restricted by a family of five youngsters, duties as the island's postmaster, meager diesel fuel supplies, and food-gathering responsibilities which include a heavy gardening routine. Jack has fifteen months of his three-year Chathams litten remaining, however, so there's plenty of time to work ZL3VB. . . . S.w.I. A. Rugg found former ZL1PL-ZL3LV now signing VZ6VO. . . . More on ZK2AB's hurricane aftermath from W6ZEN: "To his surprise, after drying the receiver and transmitter in the sun with fingers crossed, he found the things would work. But ZK2AB expects plenty of trouble because everything is corroded and rusty. His meters are shot, so he loaded up for an hour's QSO with me by drawing pencil arcs." . . . Oceania odd and ends courtesy DXCSL, VERON and W6DXC. CR6AI intended to try some CR8 DXing after his April Timor trip. . . . KH6AHQ has Palmyra KWM-1 intentions for May. . . . VK6DL anticipates a month of Cocoa-Keeling VK9DL action on phone and c.w. . . . YJ1OM closed his New Hebrides log with a PA0FX QSO and then became VR210.

Europe — K6ALH says DL9PF is aiming for Luxembourg DXpeditionary action early this month, this to be followed by an Andorra adventure in late July. . . . OY7ML tells K2UYG he's interested in homebrewing some s.s.b. gear patterned after W2EWL's famous QST version. . . . OH2WW, at 131/106, mentioned dire need of a Mississippi contact while QSOing W8XX. . . . HB9RK becomes USKA awards manager and welcomes communications concerning the "Helvetia XXII" diploma. . . . LA1IF's ham career commenced in 1928 under the call 3EB. He informs W6YK of his current 197-country DX total and mentions working 207 countries previously as

UH8AF. Prewar, as UA1AP, he reached the 87-country mark. UA4IF claims many QSOs with Delaware but no QSLs to show for it. . . . W6YK and others opine that Russian amateurs now appear to be taking the offensive in gathering QSLs for ARRL and other DX certifications. . . . GC2RS reports G3CLXK wowing the Stateside s.s.b. gang as the sole C.I. sidewinder steadily available. . . . ZL1ZGY took only c.w. gear along to the Pelagians in late April but he intended to respond to calls from hungry phone-only fellows. . . . Items on Yanks in France from F7CV (W4JY): F7FO watches for QSLs to confirm a quick s.s.b. WAC and schedules ET2U8 faithfully. . . . F7CD nervously awaits a few DXCC-clinching pasteboards before heading back to Tennessee. . . . KN4JG is a new comer to the 17 sector. . . . F7CV is giving sideband a whirl but failed to corner any YLs during this year's YLRL YL-OM Contest. "Maybe they were up on 15 or 10 — my receiver doesn't hit those bands." . . . "UR2AR is working on a new 813 rig and expects to be back on the air shortly. In the ARRL Test he operated UR2KAA along with UR2CW and ex-UR2AE to the tune of 2200 contacts." This from K2AYC who will become a Six ere long. This 1959 Test note affirms observations by ARRL contest specialist W1ZDP that the U-men were really out for points this time. . . . The Swiss Shortwave Service transmits a ten-minute "DX Corner" every Friday. Drop an inquiry to the outfit at Neueneggasse 23, Berne, for details, times, and so forth. . . . OVSV (Austria) soon will award its No. 100 AHCII (Amateurs Help Children) DX diploma, a certification for working and confirming various numbers of OE stations in steps of 10. Check with Hermann Gneiner, SOS-Kinderdorf, Imst, Austria, for detailed data. . . . The Bordeaux Wine Contest — a DX affair, not a tipping competition — will take place on the 20th and 21st of this month when certain Bordeaux Fs will seek to work hams in continental U.S.A. on 14, 21 and 28 Mc. This date coincides with the Bordeaux International Fair. The merit awards are interesting — rush inquiries to F8BT. . . . Continental tidbits thanks to DXCSL and W6DXC: It's San Marino on c.w. and s.s.b. next month for W6UQV and friends if all goes well. . . . W/K contacts are said to be sought by 3A2BF around 0700 GMT, 14,080-kc. phone.

Hereabouts — "Weird, disturbing and interesting," comments W9WB on his recent etched experience. . . . "At 1616 GMT on the 6th of March I called KZ5JF with no luck; he was on 14,180 kc. and I was at 14,204 with my beam pointed 160°. Concluding a final attempt, I tuned to my own frequency after about a 30-second interval and heard my own signal calling KZ5JF and signing. I immediately called again; after another 20- or 30-second pause I heard part of my transmission once more coming back. I tried it a third time but heard no more." It was snowing at the time, incidentally, with a huge storm centered some 50 to 100 miles to the south of W9WKU. . . . Through ARRL DXCC Deskman W1WPO, G8KS reports friend VP8EG by no means inclined to tolerate boorish pile-up antics. "He is new to the game and very keen to give as many amateurs as possible a 'new one' so we must not let him get him off the bands." . . . "I am off the bands. I didn't meet up with the quantity of VP8 and LU 'Z' amateurs they had hoped to greet during their business-pleasure voyage to the far south in February. Outposts of differing nationalities in that area apparently are just as unsociable as ever, much of the territory still in hot dispute." In Deception Island harbor we did run into K4MKN, a bacteriologist researcher aboard Argentine icebreaker *Chiriquana*, who has a 90-watt sideband rig along. He doesn't get much of a chance to operate, however, since the other operators take a dim view of his interfering with them. Nevertheless we managed to raise OK1FF and K6QKH for brief contacts. . . . K4JOS and others recommend PJ3AG for your world-wide YL collection. Harvey finds ZJA on ten phone around 2100 GMT. . . . Reference last November's "How's" intro on Yanks missing in the China Sea, G. Everett Farmer of Signal Mountain, Tennessee, advises he still has no word as to the fate of his son. . . . K2JGG expects to put FP8BA back in action for three to seven days in the first week of July. Tom seeks to borrow sideband apparatus for the jaunt. . . . Need Prince Edward Isle for your WAVE? Well, W1QMS/VE1 will be available there during the second week of July on 15 and 16 phone.

Also mark your calendars for the ARRL Southwestern Division Convention's DX Breakfast, the 26th of next month at Pasadena. A gala program is in the works; check with K6CYO for specs. . . . KP4AIO reached the 201-country rung with Serrana Bank and yearns to try his own DX luck on Mona Island, a point 'twixt Haiti and F.R. . . . The farther you are from Oregon, the fewer contacts you will need to qualify for membership in the OCC (Oregon Centennial Club), a certification sponsored by the Astoria Radio Club (W7QXS) in conjunction with celebrations of Oregon's 100th year of statehood. KNTHDB can supply detailed information. . . . KP4KD was relieved to hear from W1BDI that ARRL does not sanction "broadside" multi-QSOs between a rare DX station and numerous callers. This is because many resultant exchanges become essentially one-way deals through lack of proper

(Continued on page 162)



Correspondence From Members-

The publishers of *QST* assume no responsibility for statements made herein by correspondents.

QS-59

Box 738
Crestline, California

Editor, *QST*:

I've just finished selling my car and house and have hooked my *XYL*. Now where can I put in an advance order on the "QS-59" model "A-1-F"?

— James Gove III, K6IEB

P. O. Box 177
Evans, Colorado

Editor, *QST*:

I certainly enjoyed the article in April *QST* on the new QS-59 receiver. You did a wonderful run-down on it and I agree with your findings. It is truly a wonderful piece of equipment and should provide another excellent source of prestige for the amateur with a lucrative income and a desire for the very best ham gear in the world.

You did not, however, get the only pilot model for testing, as I have an uncle who is chief engineer at Ribmaster Electrical Implement Corp., who make the QS-59, and through him, I was fortunate enough to get one of the pilot models at a discount. Since it was a special deal, cash was required and it only cost a mere \$31,616.18, which is very reasonable considering the many features offered in the QS-59.

Again, I want to thank you for a very thorough report on the Ribmaster QS-59, and, to date, no release time has yet been set for delivery to the general public of this superlative receiver.

— Bill Skipper, K8ARG

5902 North 67th Street
Milwaukee 18, Wisconsin

Editor, *QST*:

Traditionally, *XYLs* (even those with ham tickets) aren't generally conceded to be technical whizzes, and I'm no exception — but by the time I'd finished reading your article on the QS-59 receiver I was positive that the whole thing was a gorgeous pipe dream.

— Edith Roush, K9DCC

Apt. 12, 543 Cedar S.E.
Albuquerque, New Mexico

Editor, *QST*:

About a week ago the fishing season opened in New Mexico, and you took first honors: you hooked one sixty-five inches long, weighing one forty-five, on a newsprint line two thousand miles long. I accepted completely the story on the QS-59. It was only after calling my good friend K5DSB that I was disillusioned, not to say disenchanted. He informed me concerning your wily way on April first, but waxed enthusiastic about the QS-59, saying, "This is the receiver amateur radio has been looking for — it eliminates the operator."

After about twenty minutes I regained my equilibrium and enjoyed the story even more; keep up the good work.

— John T. Morris, KN5REP/5

15 Bronxville, Road
Bronxville 8, New York

Editor, *QST*:

I have read with considerable interest your description of the new QS-59 receiver in the April issue.

It may interest you to know that I have had in operation for some time a receiver of similar design, though far more advanced in its operating potentialities.

The feature that will be of most interest to your readers is the dual panoramic scanner that tells you not only where you've been, but where you're going.

I use a backward-forward heterodyne sweep operating in the upper light band. This, as you can see, is merely an extension of the upper-lower sideband principle, and any amateur worth his salt should be able to duplicate it from parts in his junk box.

I must concede that the "have been" position of the front-panel control is of no great value, except for hams with short memories. But the "coming events" position if

fabulous. Being forewarned is to be forearmed, and knowing whom you're going to work five minutes hence allows sufficient time to contrive an unlikely story to keep the QSO going.

— Bud Muhleman, W2ZQJ

316 East 9th Street
Owensboro, Kentucky

Editor, *QST*:

Well, you've done it again, Congratulations!

Larson E. Rapp completely clobbered me — but I will say that this is the first time in six years. The job was so complete that I didn't catch on until, after completing the article, I looked in the masthead to see who "L.E.R." was! The auto-tuning and memory service device touch was just right; as I read it I thought: "How ridiculous — but some of these DX bugs really go for things like that." And the "around-the-world-echo" bit makes me groan in retrospect! The comment on the probable cost of \$40,000 puzzled me, but did not give the show away; I merely thought that it was an odd touch of facetiousness not exactly in keeping with *QST*.

You realize the full import of this confession, of course: If I had never heard of WIOU before I never would have caught on! In "Dragnet" terms, I never did recognize the m.o. — merely spotted the alias as a known criminal.

Touche.

— S. E. McCallum, K4URX

CITIZENS SENSE

5532 East National
Fresno 27, California

Editor, *QST*:

A letter from W2HQQ in March *QST* suggests that we should all drop everything and get on eleven meters.

Before everyone starts a mad rush for this inviting bit of spectrum, I hope there will be some serious thought and reading of the rules governing this new Citizens band.

This band was meant to be used by those who have need for occasional short-distance communication in the conduct of personal or business affairs. Although the rules do not specifically say so, it is very obvious that it was not meant to be a "CQ DX" band. Yet if you listen on that band you will hear quite a number of citizens band licensees calling CQ, and who appear to be hams by the way they operate. Obviously, they have not read or else choose to ignore the warning on the back of the citizens band license which says: "Don't make unnecessary transmissions. Remember that Citizens band communications are in a 'party line' system which requires cooperation of all users." If we want to call "CQ DX" with the beam pointed southwest, let's do it next door on ten meters.

This, in my estimation, is a very serious situation. If it continues it could result in more strict rules for the now almost-unrestricted 27 Mc. band. I hope that *QST* and the ARRL can stop the stampede.

Hams getting on the eleven-meter band should do so as citizens and not as hams. I have my application in for a license for this service but I do not intend to call "CQ Baltimore" on it — for that I will go back to the ham bands.

— Howard L. Smith, W6COU

(See page 9 — Ed.)

OUTSIDE LOOKING IN

10556 Wilkins Avenue
West Los Angeles 24, California

Editor, *QST*:

For the past three years I have worked at the General Telephone Company of California at Santa Monica. Every one of the 26 engineers I worked for was a "ham." In order to get a word in edgewise or to be able to converse sensibly without feeling like a "black sheep" the only thing left for me was to learn the code and become one of these people

(Continued on page 166)



Operating News



F. E. HANDY, WIBDI, Communications Mgr.
GEORGE HART, WINJM, Natl. Emerg. Coordinator
PHIL SIMMONS, WIZDP, Asst. Comm. Mgr., C.W.

ROBERT L. WHITE, WIWPO, DXCC Awards
LILLIAN M. SALTER, WIZJE, Administrative Aide
ELLEN WHITE, WIYYM, Asst. Comm. Mgr., Phone

Nuclear Powered Communication (W8NPC). A new "first" in our amateur bands was the 29.06-Mc. operation of W8NPC from Cleveland, Ohio, during the Atom Fair, Apr. 5-10, deriving its power exclusively from a four-pound battery of radioactive isotopes. W3VZD, W3AZY, K3ICG, W3MOW, W4BBL and K9LSO handled the transmitter, the latter using c.w. working out as far as KP4ACF (Apr. 10). W8NPC was heard by K5RXY (Texas) on a sked set up by W8BAH Apr. 8. Lots of voice work with local W8s was recorded and K8ABA relayed NPC directly to ARRL, the *Plain Dealer*, and others. As we get the story the 5-inch battery delivers 60 watts in the form of heat. Three watts at 2½ to 3 volts are obtainable from a thermocouple, this convertible to 24 v. using transistors. This gave the rig around 1-watt input, and an estimated ½-watt to W8NPC's 3-element beam.

Field Organization Doings. There are now 1009 Full Members in the average-sized Section of ARRL. The personnel of the typical section consists of one SCM and SEC, 25 Emergency Coordinators, two Route Managers, two Phone Activities Managers, 20 ORS, 15 OPS, 7 OBS, 6 OES, and 12 Official Observers. During '58, SCM elections were completed in 35 of the 73 ARRL Sections. In the balloting twenty new SCMs were named and 15 were re-elected for an-

other two-year term. The per cent return in SCM elections ran from 35% in Ohio to 68.2% in South Carolina. In the quarterly CD parties for all appointees there were new records in radio interchanges. W6YMD's score ran to 381,096 and W4DCQ (phone) 41,170. W4KFC made a new all-time high of 848 contacts (47-per-hour) in October and W4DCQ had the top for phone with 179 contacts in the January activity.

June V.H.F. QSO Party to Determine Section Winners. There's time, if you act promptly before June 13-14, to request the log forms for this activity from the ARRL Communications Department. The contest is between you and other v.h.f. operators in your area, for the Section Award. While the January "VHF SS" caters more to home stations, the June Party makes for a better chance to operate from some of the hilltops in one of the peak months for v.h.f. DX. New QSO records and ARRL sections worked are an inevitable result! See the full announcement elsewhere in this issue.

To take part in any ARRL test where you are working for a Section Certificate, it is short and quick to use the right name for the sections (complete list on page 6, each *QST*) as part of your exchange of information. In the v.h.f. party the names of sections exchanged must be receipted for by both operators before either may claim contact points (rule 2). In this month's v.h.f. test, work as many v.h.f. bands as you can. This helps both in the number of contacts and the multipliers (Sections).

ARRL Field Day — June 27-28. The League's FD from the very first has had that objective, to stress the testing of your emergency equipment. The Field Day has become a favorite club activity, also an operating contest between groups having the same size and number of transmitters, and a challenge to all concerned to improve equipment availabilities and operation and standings over what one has done previously! Basically every amateur can *prove his ability* to maintain communications when the chips are down by completing as much as *one* emergency-powered contact.

The rules for the ARRL Field Day are detailed elsewhere in this *QST*.

You can go out for the field test with a radio club and be assured of a top experience shared with a lot of other amateurs. Or you can go afiel alone or with one other operator for another class of entry. To prove you can establish reliable communication from field locations under handicaps and organize as a team to do a real operating

ARRL ACTIVITIES CALENDAR

June 3: CP Qualifying Run — W6OWP
June 13-14: V.H.F. QSO Party
June 17: CP Qualifying Run — W1AW
June 27-28: Field Day
July 2: CP Qualifying Run — W6OWP
July 18-19: CD Party (c.w.)
July 23: CP Qualifying Run — W1AW
July 25-26: CD Party (phone)
Aug. 5: CP Qualifying Run — W6OWP
Aug. 21: CP Qualifying Run — W1AW
Sept. 3: CP Qualifying Run — W6OWP
Sept. 16: Frequency Measuring Test
Sept. 19-20: V.H.F. QSO Party
Sept. 21: CP Qualifying Run — W1AW
Oct. 7: CP Qualifying Run — W6OWP
Oct. 10-11: Simulated Emergency Test
Oct. 17-18: CD Party (c.w.)
Oct. 20: CP Qualifying Run — W1AW
Oct. 24-25: CD Party (phone)
Nov. 5: CP Qualifying Run — W6OWP
Nov. 7-8, 14-15: Sweepstakes Contest
Nov. 18: CP Qualifying Run — W1AW
Dec. 2: CP Qualifying Run — W6OWP
Dec. 17: CP Qualifying Run — W1AW

job is worth while. Don't forget the class for mobile rig entries, too. We hope that there will be very many reports of a full-fledged or even a brief test of mobile or portable work in the FD with individual completely-transportable equipments. We want constantly to encourage as many amateurs as possible to habitually use such small transmitters as are "portable" as regular station adjuncts to keep schedules and report into nets, keeping their operators part of the group who render more than casual communications service to the fraternity and the public. Here's to a successful workout in the FD. Have fun, and report your results.

—F. E. H.



This is summer (well, almost) and a lot of people will be doing a lot of traveling on a lot of busy roads. So let's talk about mobiling, and forgive us if we get personal for a while so we can describe some of our own mobile experiences and pleasures; not that they are extraordinary, but there is just a possibility that some of you have never considered some of these features.

To begin with, our mobile rig is nothing special. The transmitter runs almost 50 watts, the receiver covers all bands from broadcast through ten meters, the antenna is a quarter wave on ten, centerloaded for other bands. At the moment we have nothing on six or two and know we're losing out on some fun thereby. Probably a pretty typical mobile outfit. One thing we have done that not all mobilers do is put a keying jack in the transmitter. This we use quite often.

For example, since we come from Pennsylvania, there are about a dozen trips down there and back every year. Having another rabid amateur in the family helps, but a good friend would do just as well. W3NF and W1NJM keep in touch during most of these trips — first on 80 or 40 meter c.w., then on ten phone as the distance narrows. C.w. contact is nearly always solid, regardless of the distance, even though signals are sometimes weak. Ten phone starts being effective at about 30 miles, and of course improves as the distance decreases. We'd feel greatly handicapped without these contacts during our travels. It enables the family to know where we are, how we are doing, our probable arrival time, weather conditions, road conditions, traffic conditions — and if they need something, we can conveniently stop and pick it up on the way. Even more important, if something should happen for which we would need assistance, they know just where we are. As the distance gets shorter, the women can get a head start on the female yakkity-yak that is always a promi-



The AREC of Alexandria, La., held its first meeting with officials on Mar. 16. Among those amateurs who attended, left to right in the photo, were K5EFS, W5GKT, K5SVD, W5YUT, K5EFO and K5SJL. Officials were pleasantly surprised at facilities which already exist.

nent part of these week ends. This sort of thing is so commonplace now that everybody in both families just takes it for granted and would sorely miss it.

On the trip to Chicago for the national convention two years ago we were on the air almost the whole way and back. Last year on the trip to Washington we took separate cars (W3NF and W1NJM) and maintained contact all the way, arranging common stopover points for meals, an outdoor picnic, and keeping tabs on each other's exact location in case of trouble. When we got lost in Baltimore, a local amateur appeared on the frequency to direct us out of our difficulty. When we got close to Washington the convention station zeroed us in to the hotel and we made specific arrangements on when and where to meet. Seldom in sight of each other, we might as well have been riding in the same car.

So far, we have been lucky — no accidents, no flat tires, no troubles, only the routine stops for gasoline, food and rest. Now and then another station will appear on the frequency and we have chatted far and wide. But had any emergency arisen, we would have been in a position to help each other or help others.

It seems to us that with so much mobiling going on during the summer, a more concerted effort ought to be made to get together so that we can help each other when or if we get into difficulties, and so that we can help others that we might meet on the road. For example, it is not unusual to come across a bad accident which has just happened. We report such incidents in this column quite frequently, but the only time we hear about them is when a call for help got results. We wonder how many such incidents occur in which an amateur calls frantically for assistance but is not answered? Probably plenty.

So let's do something about it, fellows. Let's do our mobiling on the national calling and emergency frequencies, and let's listen on those frequencies both on the road and at home. In this way, those of us on the road can keep in touch with fixed stations and with each other and those of us at home can be ready to jump in and assist if we are needed. Our statistics show that ten meters is still the favorite amateur mobile band, so let's keep 29,640 kc. jumping. Fixed tuned receivers are excellent for monitoring, and a squelch is a big help. On other bands, fix your mobile so it will operate on the national calling frequencies (see box for complete list) if it will not already do so, on whatever band or bands it works. If we'll all work toward this end our mobiling will be more fun and of greater value to everybody, including ourselves.

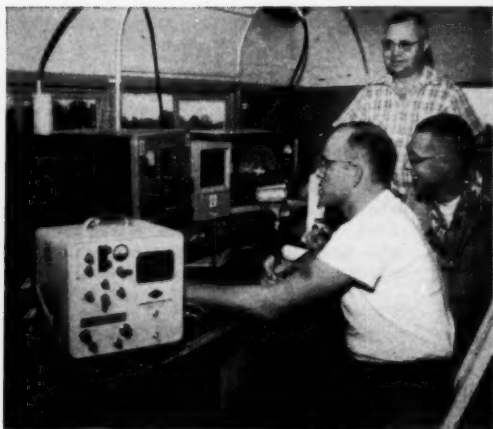
Amateurs in Delaware County, Ind., handled traffic for the Nickel Plate Railroad on Jan. 21, enabling the railroad to reroute and move four trains that otherwise could not have run because of storm conditions. W9GSY and W9DOK were contacted on the Indiana Phone Net by W9BGF in Paxton who was looking for a Muncie station who could contact the dispatcher in Muncie. While W9GSY handled

NATIONAL CALLING AND EMERGENCY FREQUENCIES (Kc.)

3550	3875	7100	7250
14,050	14,225	21,050	21,400
28,100	29,640	50,550	145,350

During periods of communications emergency these channels will be monitored for emergency traffic. At other times, these frequencies can be used as general calling frequencies to expedite general traffic movement between amateur stations. Emergency traffic has precedence. After contact has been made the frequency should be vacated immediately to accommodate other callers.

The following are the National Calling and Emergency Frequencies for Canada: c.w. — 3535, 7050, 14,060; phone — 3765, 14,160, 28,250 kc.



The communications bus of the Lincoln, Nebr., c.d. was used in a recent drill covering the entire county. Ten mobiles participated. The photo on the left shows the bus with some of the gang standing around. On the right is a shot inside the bus showing some of the new equipment installed, with WØKVM, KØHPT and WØFTR doing the operating.

some of the traffic via landline, W9DOK contacted W9NQB on six meters, who went to the dispatcher's office in his six meter mobile. There contact was made by radio, W9NQB to W9DOK on six, W9DOK to W9BGF on 75, and several messages were handled, allowing the trains to roll.

More on the January floods in Ohio: On Jan. 21, Southwestern Ohio was hit by heavy rains and winds which caused extensive flooding and damage. The Queen City Emergency Net was called upon to assist the Red Cross by providing communications where phone lines were down, W8VVL, net control station, was activated at 1700, and ten and six meters were active almost continuously until late the following day. The net was the only link into several areas. Mobiles were in operation in the Northside, Newtown and Loveland areas until communication was restored. Loveland was especially hard hit, and six meter mobiles were active in that area until late Jan. 22, with K8GYK acting as NCS. — W8JSF.

Newfoundland amateurs were of assistance on Feb. 16 when a severe snowstorm knocked out communication between Carbonear, Bell Island and St. John's. A station was set up at the General Hospital in St. John's by VO1FB and 3750 kc. was continuously monitored. Traffic was handled until late in the afternoon of Feb. 18, when communications facilities had returned to normal. Amateurs were alerted again on Feb. 19 as the snow turned into rain and hurricane-force winds, but no further emergency communication was required. VO1CZ gives the following list of amateurs who took part in the operation: VO1s AO FB BU BJ AK FD BY DN AI BD DT DP ER EZ CY DG CB AB CZ, K8JQO/VO1, W2ZRX/VO1, K0HHB/VO1.

An extensive brush and grass fire near Oklahoma City on March 14 gave some of the local amateurs an opportunity to do their stuff. W5UGM first reported the situation over the air, and soon some of the mobiles were on the way to lend a hand. W5OQT went on the air as a fixed station, working with the mobiles for about five hours. The mobiles reported to the fire-fighting officials and were set to work watching the fire from various vantage points so that buildings and property in the direction the fire was taking could be protected. They also helped with control of traffic so that heavy equipment and fire fighters were not interfered with by sightseeing vehicles. Mobiles taking part included W3s UGM AZO UYQ and K5LDF. Fixed stations were W5OQT and W5DRE. — W5UYQ.

The St. Petersburg Amateur Radio Club handled communications for the annual St. Petersburg-Habana Yacht Race on Mar. 14 through 16. A station using club call

W4GAC/4 was set up at the St. Petersburg Yacht Club, and CO2UG/2 set up a station at the International Yacht Club in Havana. Regular schedules were made for the duration of the race. Reports compiled at the St. Petersburg end by members of the Race Committee, who kept an accurate check of the position and progress of the boats through reports from Coast Guard helicopters, patrol boats and other spotters, were relayed to CO2UG/2 from W4GAC/4. CO2UG/2 sent information on the arrival of the boats in Havana Harbor which was relayed to the Race Committee for compilation of reports and handicaps. The activity went off with hardly a hitch, with twelve amateurs taking part. All operation was on 40-meter phone.

Twenty-eight amateurs of the Cuyahoga County (Ohio) AREC took part in the annual Heart Fund drive on Heart Sunday, Feb. 22. Ten mobiles, with police officers riding shotgun, picked up \$160,000 at 40 collection stations. The center of attraction at collection headquarters was the amateur station setup, where both visitors and workers were able to follow the progress of the mobiles over the city streets and listen to the dispatching. Direct contact was maintained with police headquarters by means of a portable station in the police dispatcher's office. Two net controls were in the field to maintain reliable contact with the mobiles at all times. — W8AEU, EC Cuyahoga County, Ohio.

February reports were received from 27 SECs, representing 8987 AREC members. This is one more SEC report and over 2000 more AREC members than were accounted for in February of last year; this despite the fact that two SECs submitted no AREC membership totals with their reports.

NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc.

7140 kc.

These frequencies are employed throughout the United States by amateurs using radioteletype.

Shall we break 30 next month? Sections reporting: NYC-LI, Ga., Wyo., N. Dak., Mich., Mont., Minn., Colo., N. Mex., W. Mass., W. Va., N. C., W. N. Y., E. Bay, E. Fla., Maritime, Ind., San Joaquin Valley, S. Texas, Ala., Vt., Wash., Wis., R. I., Santa Clara Valley, Nevada, Ore.

An ice jam below Moline, Ill., caused backup flooding of the Rock River in Rock Island on Feb. 27, precipitating a civil defense alert in that city. Nets were activated on six and ten meters. W9OWN and W9RYU carried a six meter portable aboard an amphibious vehicle which was evacuating hundreds of people from areas of potential flooding. K9GJF was also on hand, providing liaison on six meters from state police and sheriff's patrol cars. K9EUF patrolled the south of the river. W9ICZ was net control station at Rock Island with W9OWN as alternate.



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TRAFFIC TOPICS

On that battered WZKRE is the "traffic champ" for 1958, having accumulated 478 BPL points during the year. The issue was never in doubt, Georgie having sprung into the lead with her January total and stayed there throughout the year, far outdistancing her nearest competitor. This was the third straight year that WZKRE has been "traffic champ," having accumulated totals of 345 and 282 in 1957 and 1956 respectively to place tops during those years as well. In second place was W3CUL with 302 points. Mae has the distinction of having made BPL 14 times in 12 months by virtue of having made it twice from her Florida location in addition to making it every month from home.

The competition in the top ten is rough. The rest of the list includes W7BA (282), W0BDR (248), W8CA (246), W8UPH (178), W0PZO (167), W0LGG (164), W0CPI (161) and W9NZZ (156). Since does not permit a further listing of the many fine traffic men (and gals) who ran up good-sized BPL point totals during the year, but we can list the top dog, and his BPL point total, for each call area: First, W1UEQ (144); Second, W2KEB (478); Third, W3CUL (302); Fourth, W4PL (119); Fifth, W5RCF (155); Sixth, W6GYH (140); Seventh, W7BA (282); Eighth, W8UPH (178); Ninth, W9NZZ (156); Tenth, W0BDR (248).

This isn't just a list of calls, *these are traffic handlers!* You don't place anywhere near the top of the BPL pile without handling heaps of traffic. All kudos to this list of traffic champions throughout the years we have kept these records: 1947, W4PL; 1948, W7CKT; 1949, W6CE; 1950,

Everyone who has made BPL since 1946 has an entry on our records, indicating his BPL point total, except that we don't include multiple-operator stations or stations not owned and operated by individuals. The old saw "Here today and gone tomorrow" does not apply to this list. If you make 25 or more BPL points over a five-year period you're on the list for keeps. Only if you have fewer than that and are inactive in BPL for five years do you lose them. Thus, this list grows. Since the very purpose of keeping these records is competitive, you may be interested to know who heads it. Actually, some of those who do haven't hit the BPL column for several years, and just ride on their past records; but what is also interesting is that seven of the high ten for 1958 are also among the high ten for 1947-58 inclusive — which shows that when you get into the habit of handling sends of traffic, you don't get over it quickly, as a rule. Here are the first 25 in the "all time" (post-war) list: W3CUL (4070), W4PL (1779), W7BA (1536), W8SCA (1528), W9BDR (1434), W2KEB (1376), W3W1Q (1184), W6CPI (1066), W9NZZ (1057), W6KYV (1017), W9UJZ (982), W7CZY (885), W9D0 (819), W6GYH (816), W6CE (815), W7QTQ (809), W7PGY (797), W0PZ0 (761), W2RUF (553), W4PJU (522), W2KEV (511), W4QX0 (479), W9CIAR (454), W0ZJO (453), W7IOQ (447). If some of these calls don't sound familiar, it's because you haven't been handling traffic for more than a few years.

We feel that organizational rather than individual achievements are the most important, but those "iron men" (and women) who plug away year after year in the traffic field certainly deserve some credit, for they add not a little to the stature of the radio amateur for his traffic-handling activities. Two of the above (W9NZZ and W3CUL) are Edison Award winners, and others have received commendations. So just this once, each year, let's take off our hats to the people who handle most of the traffic and who spend long hours at it each night at the expense of goodness knows what, or whom.

Net Reports. Slo Speed Net reports 31 sessions, in which net manager K0AGJ was NCS for 28. Hudson Traffic Net had 31 sessions, 216 check-ins, cleared 179 messages. North-Texas-Oklahoma Net handled 252 messages with 1087 check-ins. Transcontinental Phone Net reports 31 sessions and a traffic total of 3996.

National Traffic System. The Communications Manager's annual report to the Board of Directors says, in part: "No system is worthy of the name if information on it cannot be centralized, coordinated and evaluated." Your NTS is what it is to a great extent because of the fact that it has a central coordination and evaluation point—because information on it is made available at that point and for that purpose. Mind you, this is not the *only* requisite of system, but it is one of the several essential ones.

Some of our NTS people do not seem to subscribe to this or if they do, they do not follow through on it. Actually, this is a mild gripe, because all in all NTS does very well in reporting. We thought those of you who are lax might want to know that you are holding up progress. We won't name names; it is not necessary. You know who you are, from net control stations up to and including the Transcontinental Corps. It takes you a couple of minutes and costs three or four cents. Can do? Funny thing, all surveys show that NTS is gaining strength and prestige every year, and yet we keep on griping at you guys. Guess that's because we want NTS to be perfect. Don't you?

The counting of traffic in nets is not quite the same as the counting of traffic handled by an individual station (see *Operating an Amateur Radio Station*, p. 12). The net traffic count is the number of message handlings completed during the net session. That is, a message transmitted by a net station and received by another net station is counted *one* in that net's traffic total. There seems to be some misunderstanding about this, but what could be simpler? The individual station's traffic count has nothing to do with it. The net control station keeps the count and reports it at the end of each net session to the net manager, who totals it up for the month and reports it to headquarters. You do *not* count traffic that is not actually handled during the net session. You do *not* add up the individual net stations'

traffic totals. You do not count traffic that is reported but not handled in the net. If you have been doing this wrong, please correct it in future reports.

March reports:

Net	Sessions	Traffic	Rate	Average representation (%)
EAN.....	28	1486	.980	53.1 98.8
CAN.....	31	1311	.856	42.2 100.0
PAN.....	31	1091	.813	54.5 100.0
1RN.....	31	755	.455	24.4 93.5 ¹
2RN.....	62	633	.425	10.2 97.4
3RN.....	62	576	.366	9.4 94.6
4RN.....	61	793	.358	13.0 68.9
RN5.....	62	1209	.487	19.5 93.4
RN6.....	62	1288	.508	20.8 93.5
8RN.....	55	263	.172	4.8 91.5
9RN.....	58	908	.467	15.6 82.3
TEN.....	89	1101	.509	12.4 63.9
ECN.....	40	141	.237	3.5 63.3
TWN.....	31	460	.269	14.8 76.1 ¹
Sections ²	742	5343		7.2
TCC Central	62 ³	1161		

Summary...	1445	19119	EAN	12.4	EAN/PAN
Record...	1450	20030	.980	13.9	100.0
Late Reports:					
8RN (Feb.)	53	328	.212	6.2	86.2

¹ Regional net representation based on one session per night. Others are based on two or more sessions.

² Section nets reporting: S. Dak. 75 Meter, S. Dak. 40 Meter, S. Dak. CW; SCN (Calif.); CPN & CN (Conn.); BCEN (B.C.); FPTN & Gator (Fla.); TLGN (Iowa); Tenn. Section; SCN (S. C.); VN (Va.); WVN (W. Va.); SMN (Md.); KPN, EKPN, KYN (Ky.); AENP, AENO, AENT & AENB (Ala.); MJN, KMG, MSPN, MSPN Noon (Minn.); Iowa 75 Phone.

³ TCC functions reported, not counted as net sessions.

Well, no records broken this month. One regional net and one TCC Area failed to report, and another TCC Area did not report its countable traffic. Section level reporting was low by comparison this month, too. Added together, they spelled the difference, even though there were some missing reports last March, too. Let's make up for this small deficit in future reports.

W8SCW points out that all EAN regions are 100% in attendance for the first three months of 1959 except ECN, which missed two sessions in March. W9DO says that the QRN is here; a CAN certificate has been awarded to W9DYG. W6PLG is back on the job on PAN, but has to take it easy; PAN started meeting at 2000 PST on April 26, when "daylight saving" (bah!) time went into effect. W2PHX submits his first report for 2RN and reports things going smoothly except for a sudden rash of people who want to be relieved of EAN liaison jobs. W3UE reports that 3RN is getting better representation from Pennsylvania and that credit for this is primarily due to the efforts of W3AXA in E. Pa. and W3KUN in W. Pa. North Carolina is now 100% in 4RN, the only section to hit all 4RN sessions in March. RN6 now meets at 1900 and 2100 PST in order to adjust to the new PAN schedule. W7GMC has resigned as RN7 manager. ECN is having the usual trouble with Maritime representation.

Transcontinental Corps. Our new TCC-Pacific manager is W6EOT, who made his first report for March activities. Cecil takes over this job from W6BPT at a time when things get tough on the transcontinental circuits, so give him all the support you can. On the TCC-Central front, W6BDR reports that one of our old stand-bys, W8SCA, is having eye trouble and is temporarily kaput. We hope to have Doc back with us soon.

March reports:

Area	Functions	Successful (%)	Traffic	Out-Of-Net Traffic
Central.....	62	96.8	2330	1161
Pacific.....	112	95.5	2576
Summary..	174	96.5	4906	1161

The TCC roster: Eastern Area (W3WG, Dir.) — W1s AW NJM TUW, W2VDT, K2s UTV SIL MES, W3s LXU COK WG, K4KNP, W9DO. Central Area (W6BDR, Dir.) — W6s LCX BDR LGG. Pacific Area (W6EOT, Dir.) —

W5DWB, W6s EOT HC ELQ, K6s DYX CPQ LVR HLR GID, W7s ZB VIU GMC BDU, K7CWV, W8KQD.

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for March traffic:

Call	Orig.	Recd.	Rel.	Del.	Total
W2KEB.....	173	1586	1476	236	3471
W3CUL.....	252	1395	1097	273	3017
W6BDR.....	107	1494	1273	71	2845
W7BA.....	31	992	948	42	2013
K2UTV.....	192	666	633	33	1524
W6IA.....	52	720	710	6	1488
W4LGG.....	44	616	648	23	1331
K5FGF.....	1149	90	34	5	1278
W8UPH.....	21	555	510	42	1128
K2TEZ.....	265	416	120	211	1012
K2SL.....	16	487	449	30	982
W6LCX.....	34	467	452	15	968
W5RCF.....	32	440	405	35	912
K1CIF.....	65	468	367	3	903
W9NZZ.....	238	318	2	316	874
K1BSC.....	131	351	308	41	831
W6DO.....	18	391	41	368	818
W5PI.....	2	403	369	36	812
W7PGV.....	36	392	352	29	809
K6YBV.....	78	381	332	14	805
W4PL.....	25	415	345	10	795
W6EOT.....	9	392	346	37	784
K4QLG.....	479	144	25	119	767
K6RBD.....	26	347	336	10	719
K6ZK.....	30	280	220	183	710
K4ELG.....	24	326	284	36	670
W5SMK.....	28	313	309	4	654
K4VDL.....	33	311	304	4	652
W6RL.....	1	321	314	5	641
K6DYX.....	4	299	308	4	615
W6OME.....	53	279	271	8	611
K5OEA.....	52	265	238	36	591
K9OLU.....	257	28	160	126	571
W6QGY.....	124	173	191	80	568
W2RUF.....	24	321	95	125	565
K4SP.....	25	281	218	37	561
W5CEZ.....	18	284	241	14	557
K6EWC.....	20	267	197	70	554
W6QDY.....	205	192	97	49	543
W6DYG.....	30	280	226	24	541
W1AWA.....	27	347	143	17	534
W6IDA.....	8	261	255	0	524
W6ZYK.....	18	246	175	77	516
W6KQD.....	73	231	182	24	510
W3UE.....	31	247	223	8	509
W7TT.....	55	232	131	86	504
W7ZB.....	10	249	238	6	503
Late Reports:					
K5FGF.....	816	95	34	27	972

More-Than-One Operator Stations

Call	Orig	Recd.	Rel.	Del.	Total
K5WSP.....	387	901	886	15	2189
W4PFC.....	216	337	326	11	1090
K4WCZ.....	148	235	166	15	564
K5URA.....	448	58	41	12	559
K6GID.....	153	180	49	128	510

BPL for 100 or more originations-plus-deliveries

K6GZ	292	K6LIN	124	W7VIU	104
W4RHJ	279	W3TN	121	W7BZB	103
K3WRJ	208	W8DAE	116	W5HFN	101
K6DCW	178	K1CMS	113	K1JAD	101
W1SMU	145	K4ZAT	112	K2SXX	101
W9ETM	134	W9KON	110	Late Reports:	
K1ADI	128	KN1HK	110	K6DGW (Jan.)	110
W7YHS	124	K2VVL	110	W1HKA (Feb.)	116

More-Than-One Operator Stations

VE3NAR 209 VE3VHF 178

BPL medallions (see Aug. 1954 QST, p. 64) have been awarded to the following amateurs since last month's listing: K1CIF, K1JAD, K2QHR, W6XCR, K4KNP, K4UBR, K5OEA, K6LVR, W9DYG, K9IXD.

The BPL is open to all amateurs in the United States, Canada, Cuba and U. S. possessions who report to the SCM a message total of 500 or more or 100 or more originations plus deliveries for any calendar month. All messages must be handled on amateur frequencies within 48 hours of receipt. In standard ARRL form.

CODE PROFICIENCY PROGRAM

Twice each month special transmissions are made to enable you to qualify for the ARRL Code Proficiency Certificate. The next qualifying in from W1AW will be made June 17 at 2130 Eastern Daylight Time. Identical texts will be sent simultaneously by automatic transmitters on 3555, 7080, 14,100, 21,075, 28,080, 50,900 and 145,000 kc. The next qualifying run from W6OWP only will be transmitted June 3 at 2100 PDST on 3590 and 7128 kc.

Any person can apply. Neither ARRL membership nor an amateur license is required. Send copies of all qualifying

runs to ARRL for grading, stating the call of the station you copied. If you qualify at one of the six speeds transmitted, 10 through 35 w.p.m., you will receive a certificate. If your initial qualification is for a speed below 35 w.p.m. you may try later for endorsement stickers.

Code-practice transmissions are made from WIAW each evening at 2130 EDT. Approximately 10 minutes' practice is given at each speed. Reference to texts used on several of the transmissions are given below. These make it possible to check your copy. For practice purposes, the order of words in each line of QST text sometimes is reversed. To improve your flat, hook up your own key and audio oscillator and attempt to send in step with WIAW.

Date Subject of Practice Text from April QST
June 1: A Selective 21-Mc. Converter, p. 11
June 5: The Audofl, p. 16
June 9: C. W. Monitor for the Mobile, p. 18
June 11: Coaxial Cable Attenuation, p. 20
June 15: Turnstile for Two, p. 29
June 18: Simulated Emergency Test — 1958, p. 48
June 24: Portable and Mobile Rules, p. 54
June 29: The QS-59 Communications Receiver, p. 67

ELECTION NOTICE

(To all ARRL members residing in the Sections listed below.)

You are hereby notified that an election for Section Communications Manager is about to be held in your respective Section. The notice supersedes previous notices.

Nominating petitions are solicited. The signatures of five or more ARRL full members of the Section concerned, in good standing, are required on each petition. No member shall sign more than one petition.

Each candidate for Section Communications Manager must have been a licensed amateur for at least two years and similarly a full member of the League for at least one continuous year immediately prior to his nomination.

Petitions must be in West Hartford, Conn., on or before noon on the closing dates specified. In cases where no valid nominating petitions were received in response to previous notices, the closing dates are set ahead to the dates given herewith. The complete name, address, and station call of the candidate should be included with the petition. It is advisable that eight or ten full-member signatures be obtained, since on checking names against Headquarters files, with no time to return invalid petitions for additions, a petition may be found invalid by reason of expiring memberships, individual signers uncertain or ignorant of their membership status, etc.

The following nomination form is suggested. (Signers will please add city and street addresses to facilitate checking membership.)

Communications Manager, ARRL. (place and date)
38 La Salle Road, West Hartford, Conn.

We, the undersigned full members of the
..... ARRL Section of the
Division, hereby nominate
as candidate the Section Communications Manager for this Section for the next two-year term of office.

Elections will take place immediately after the closing dates specified for receipt of nominating petitions. The ballots mailed from Headquarters to full members will list in alphabetical sequence the names of all eligible candidates.

You are urged to take the initiative and file nominating petitions immediately. This is your opportunity to put the man of your choice in office.

— F. E. Handy, Communications Manager

Section	Closing Date	SCM	Present Term Ends
Yukon*	June 10, 1959	W. R. Williamson	Mar. 17, 1949
West Indies	June 10, 1959	William Werner	Aug. 10, 1958
Nebraska	June 10, 1959	Charles E. McNeel	Apr. 15, 1959
Oregon	June 10, 1959	Hubert R. McNally	May 28, 1959
Mississippi	June 10, 1959	John Adrian Houston, sr.	May 29, 1959
Saskatchewan	June 10, 1959	Lionel O'Byrne	June 10, 1959
Oklahoma	June 10, 1959	Richard L. Hawkins	Aug. 9, 1959
Maine	June 10, 1959	John Fearon	Aug. 9, 1959
Manitoba*	June 10, 1959	James A. Elliott	Aug. 9, 1959
Southern	June 10, 1959	Herbert C. Brooks	Aug. 26, 1959
New Jersey			
Alaska	June 10, 1959	Eugene N. Berato	Resigned
West Virginia	July 10, 1959	Albert H. Hix	Sept. 18, 1959

San Joaquin Valley	Aug. 11, 1959	Ralph Saroyan	Oct. 10, 1959
Indiana	Aug. 11, 1959	Arthur G. Evans	Oct. 14, 1959
East Bay	Aug. 11, 1959	B. W. Southwell	Oct. 14, 1959
San Diego	Aug. 11, 1959	Don Stansifer	Oct. 15, 1959
Utah	Aug. 11, 1959	Thomas H. Miller	Oct. 28, 1959

* In Canadian Sections nominating petitions for Section Managers must be addressed to Canadian Director Alex Reid, 169 Logan Ave., St. Lambert, Quebec. To be valid, petitions must be filed with him on or before closing dates named.

ELECTION RESULTS

Valid petitions nominating a single candidate as Section Manager were filed by members in the following Sections, completing their election in accordance with regular League policy, each term of office starting on the date given.

Colorado	Carl L. Smith, W9BWJ	Feb. 11, 1959
British Columbia	Peter M. McIntyre, VE7JT	Apr. 10, 1959
Michigan	Ralph P. Thetrau, W8PX	Apr. 10, 1959
Wisconsin	George Woida, W9QKB	May 12, 1959
Connecticut	Victor L. Crawford, W1TYQ	May 23, 1959
Eastern Pennsylvania	Allen R. Breiner, W3ZRQ	June 15, 1959

In the Maryland-Delaware-District of Columbia Section of the Atlantic Division, Mr. Arthur W. Plummer, W3EQK, Mr. Thomas B. Hedges, W3BKE, and Mr. George Knopf, W3YYB, were nominated. Mr. Plummer received 359 votes, Mr. Hedges received 267 votes and Mr. Knopf received 97 votes. Mr. Plummer's term of office began March 21, 1959.

A.R.R.L. AFFILIATED CLUB HONOR ROLL

One of the requirements for ARRL affiliation of bona fide amateur radio clubs is 51% membership in the League. When a club comes up with 100% membership, we think they deserve some special recognition. Accordingly, we present herewith the first 1959 list of such clubs, based on information submitted in the club annual questionnaire form.

As additional questionnaire forms are received indicating 100% ARRL membership, these clubs will be noted and included in an additional listing later this year. Clubs reporting favorable results of ARRL membership drives being conducted currently can also be included if they qualify. Each club listed below and in the subsequent listing will receive a special certificate recognition as a 100% ARRL club. This certificate will look good on the clubroom wall and makes a permanent record of the high standing of the society in its support of the League.

Aeronautical Center Amateur Radio Club, Inc., Oklahoma City, Okla.
Amateur Radio Club of Savannah, Savannah, Ga.
Amateur Radio Club of Selma, Selma, Ala.
Amateur Radio Transmitting Society, Inc., Louisville, Ky.
Batavia Amateur Radio Association, Batavia, N. Y.
Central Illinois Radio Club, Bloomington, Ill.
Central Kansas Radio Club, Inc., Salina, Kans.
Chicago Radio Traffic Assn., Chicago, Ill.
Chisholm Trail Amateur Radio Club, Inc., Duncan, Okla.
Door County Amateur Radio Club, Sturgeon Bay, Wis.
The DX Club, Lansdale, Pa.
Electric City Radio Club, Great Falls, Mont.
Fountain City Radio Club, Knoxville, Tenn.
Harlo Radio Club, Harlowton, Mont.
Helix Amateur Radio Club, El Cajon, Calif.*
Hi-Plains Amateur Radio Club, Plains, Kans.
Kerrville Radio Club, Kerrville, Tex.
Keystone Amateur Radio Club, Springtown, Pa.
Lower Columbia Amateur Radio Association, Longview, Wash.
Mason County Amateur Radio Club, Ludington, Mich.
Maui Amateur Radio Club, Kahului, Maui, Hawaii
Military and Amateur Radio Club of Ohio State University, Columbus, Ohio
Montevideo Radio Club, Montevideo, Minn.*
Montgomery County Amateur Radio Emergency Corps, Inc., Hillsboro, Ill.
The Old Dominion Amateur Radio Club, South Boston, Va.
Orange Amateur Radio Club, Inc., Orange, Tex.
Queen City Emergency Net, Inc., Cincinnati, Ohio
Rome Radio Club, Inc., Rome, N. Y.
Sheridan Radio Amateur League, Sheridan, Wyo.

South Lyme Beer, Chowder and Propagation Society, South Lyme, Conn.
 South St. Louis Amateur Radio Club, St. Louis, Mo.*
 State Line Radio Club of New York and New Jersey, Montvale, N. J.
 Sussex County Amateur Radio Association, Newton, N. J.
 Terry County Amateur Radio Club, Brownfield, Tex.
 Totah Amateur Radio Club, Farmington, N. Mex.
 Vanderburgh Amateur Radio Emergency Service, Princeton, Ind.
 Victor Valley Amateur Radio Club, Victorville, Calif.
 West Essex Amateur Radio Society, W. Caldwell, N. J.
 York Road Radio Club, Inc., Elkins Park, Pa.

* Additions to 1958 Honor Roll (1958 questionnaire received too late for December listing).

CLUB COUNCILS AND FEDERATIONS

Affiliated Council of Amateur Radio Clubs, Inc., Lyman Rinker, W7AZD, Secy., 3734 N.E. 66th Ave., Portland 13, Ore.

Chicago Area Radio Club Council, Inc., Leo Knoelke, K9GTS, Secy., 631 Ferdinand, Forest Park, Ill.

Indiana Radio Club Council, Inc., Fred Sawyer, W9FJI, Secy., 526 South Gibson, Princeton, Ind.

Michigan Council of Clubs, Roland R. Beineman, W8QBA, Secy., 136 Guild St., N.E., Grand Rapids, Mich.

Ohio Council of Amateur Radio Clubs, Karl H. Kanals, W8THX, Secy., 225 Tibet Rd., Columbus, Ohio.

San Diego Council of Amateur Radio Organizations, Inc., Patricia J. Muelheim, W6GGX, Secy., 4275 Del Mar Ave., San Diego 7, Calif.

YOUR NET DIRECTORY

Compiling the net directory is a big job each year, especially if it is to hit distribution early enough in the fall to be of real use. Want to help? Here's how:

1) Watch for full details in Sept. QST, then get your net registered *right away*. August 1 is the nominal date to begin registration, but the first QST net list is in the November issue (deadline, Sept. 15).

2) Include *all* the dope we ask for, and give it in just the form requested. This means reading the instructions carefully. Using the regular card form (CD-85) is a big help and makes your job easier, too.

3) It helps to designate one person to register the net, so we won't get a flock of registrations for each net, each one reading a little different; this wastes our time and causes delays in getting the directory printed up.

4) Inform us promptly of any changes or corrections.

5) Register your net separately from other correspondence. We can't promise to dig net info out of bulletins, SCM reports or other material.

If you'll help in the above ways, we're going to make a superhuman effort, this year, to get the printed net directory in circulation by Dec. 1.

HIGH SPEED CODE PRACTICE

Code practice at speeds of 15, 25, 35, 45 and 55 w.p.m. is continuing on 7120 kc. each Sunday at 2030 EST (0130 GMT), sponsored by the Connecticut Wireless Assn., Inc. W1NJM is primary station, but during summer months other stations may be used. Also, although 7120 kc. is the primary frequency, other frequencies and other bands may be used if facilities are available any particular Sunday evening. So, listen on 7120 kc. starting at 2015 EST (0115 GMT) for complete info on what stations are transmitting and on what frequencies. Text at 15 and sometimes at 25 is mixed numerals and letters from tube tables. Text at higher speeds is plain language. Usually practice starts with the lower speeds, but sometimes the procedure is reversed, starting at 55 w.p.m. instead of 15.

The next C.W.A.-sponsored high speed code test is scheduled for Sept. 13, same time and same frequency. Speeds for that will be 40, 45, 50 and 55 w.p.m. Better start practicing *now*, OM, if you want to win that high speed certificate in the fall.

WIAW OPERATING NOTE

The complete summer schedule of the ARRL Headquarters station appeared on pp. 102-103 of last month's QST. See that issue for information on when to visit WIAW, have a QSO, or copy the various bulletin transmissions that are made daily on phone and c.w.



John Rafferty, W3GGH, was honored in his 50th Year of amateur radio at the annual dinner of the Bucks County Amateur Radio Club of Bristol, Pa. Director Crossley is here shown making the award of his Old Timers' Certificate, club president W3JFI and XYL in the foreground.

Briefs

The Golden Triangle Amateur Radio Club has started a radio chess net. To receive rules and schedule, send \$25 to GTARC care of YMWHA, 315 South Bellefield Avenue, Pittsburgh, Penna.

Coinciding with Oregon's 100th year as a state, the Astoria Amateur Radio Club is sponsoring a contest requiring 100 contacts with different Oregon hams during the year 1959. If interested, write for details to R. T. Carruthers, jr. KN7HDB, P. O. Box 1231, Warrenton, Ore.

Our prediction concerning a possible U.S.S.R. World Wide Telegraphy Contest (p. 10, last month) was right as rain, for complete rules were received from Central Radio Club on April 27. On that date W1AW began transmitting special bulletin number 494, this carrying complete details. The contest ran from 2100 May 9 through 0900 May 10, Greenwich Mean Times, and logs were due at Box 101, Moscow, right afterwards.

Also on the foreign contest front, OH2XK announces that SRAL, the Finnish IARU Society, will sponsor a Scandinavian Activity Contest September 19-20 and 26-27. Watch *How's DX?* for the dope.

Processing of the 1959 ARRL V.H.F. Sweepstakes Contest has been slowed by logs from which calls, sections, score data, and other information required by the rules was omitted. Nevertheless, final results on the January 10-11 activity are tentatively scheduled for July QST. Stand by, please.

Final standings on the February 13 Frequency Measuring test are also coming up in next month's issue.

DXCC NOTES

Announcement is hereby made of the addition to the ARRL Countries List of Roncador Cay & Serrana Bank. U. S. controlled territory located approximately 200 miles east of Puerto Cabezas, Nicaragua, this addition is made by virtue of points 1, 2 and 3 as explained in May 1955 QST, page 68.

DXCC credit will be given starting August 1, 1959 for creditable confirmations dated on or after November 15, 1945. This is to permit foreign amateurs to start receiving credit at the same time as those in the U. S. A. Confirmation

tions received prior to August 1, 1959 for this country will be returned without credit.

Reference is made to previous announcements in July, 1958, and January, 1959, *DXCC Notes* concerning DXCC

credit for confirmations from ZL1ABZ. The earlier decision has been modified. Consequently, ZL1ABZ confirmations which show 3.5-Mc. to 3.5-Mc. contact, regardless of date, will be acceptable for DXCC crediting.

DX CENTURY CLUB AWARDS

HONOR ROLL

W1FH.....294	G3AAM.....289	W6GFE.....287
W6AM.....294	W2ACW.....289	W3KT.....287
ZL2CX.....294	W6GJ.....289	W2BXA.....287
WSHWG.....293	W6C1Q.....288	W6MX.....286
PY2CK.....292	ZL1HY.....288	W3BES.....286
W3HGD.....292	G2PL.....288	W8MD.....286
KV4AA.....291	W9TYE.....287	W8BKP.....286
W9NDA.....291	W6DZZ.....287	W6ADP.....286
W3JN.....290	W1ME.....287	W7AMX.....285
W8RA.....289	W2HUQ.....287	W6EBG.....285
W3JNN.....289	W9RBL.....287	W7GUU.....285
W5ASG.....289		W5ADZ.....285

Radiotelephone

PY2CK.....292	VQ4ERR.....279	W8KML.....274
W8CZ.....294	W3JN.....279	W9TY.....273
W1FH.....282	W8BF.....279	W6AM.....272
WSHWG.....282	ZL1HY.....277	W9NDA.....272
Z8GBW.....282	W9RBL.....275	CX2CO.....270

From March 1, to April 1, 1959 DXCC certificates and endorsements based on postwar contacts with 100-or-more countries have been issued by the ARRL Communications Department to the amateurs listed below.

NEW MEMBERS

W6O8U.....171	W3ZHQ.....104	W7BGG.....101
VE2II.....169	W5QJL.....104	W8BMX.....101
W5BRH.....159	K6QFQ.....104	W9ETN.....101
1K1DB.....156	G3HQX.....104	K9DIL.....101
D3WA.....154	OH3TY.....104	EA1FD.....101
SM7BY.....115	SM5AWJ.....104	GZAMV.....101
W2KHT.....114	VE7QL.....104	GA8HE.....101
K6LY.....112	V81BB.....104	G8DI.....101
OH3TT.....112	4X4KX.....104	KM6HL.....101
W6TWL.....111	K21KQ.....103	OK1MP.....101
SM5NG.....111	W6JN.....103	W1YS.....101
K2CQP.....110	W9N1J.....103	K2PHC.....100
K9CAZ.....110	HC1HL.....103	W3HQO.....100
W7EMY.....109	H1ZLD.....103	K5CSA.....100
W8ESC.....108	W1YZL.....103	K3AM.....100
G2AOL.....108	DL3BE.....102	K5JZY.....100
W7QNL.....107	Z86VJ.....102	W6WLO.....100
W9GVZ.....107	W7RTG.....102	W8WVJ.....100
W9LJX.....107	W3A1X.....101	G3GMY.....100
OK1PD.....105	W4KPK.....101	KX6BZ.....100
U66F.....105	K41CK.....101	OE2KE.....100
W3VDV.....104	W7ABO.....101	PY3XE.....100

Radiotelephone

PA0FX.....126	W4VZU.....103	W1LY.....100
W2YOG.....124	W4BQY.....102	W1PQC.....100
LA4HF.....121	F7DD.....102	K20PI.....100
ZL3IA.....114	VE3RE.....102	K4JR.....100
K2EWB.....106	W81JZ.....101	W4SGD.....100
W1VRK.....104	W01NI.....101	K9GFV.....100
CE3JE.....104	W0JWL.....101	G3JCQ.....100
W4MS.....103	SM5KG.....101	VE1ADE.....100

ENDORSERS

W4TM.....282	W6TXL.....253	W2CWK.....230
W2QHH.....280	W8QJR.....253	W3JMV.....230
W4DQH.....280	W2BRV.....252	W4KRU.....230
W8UAS.....280	W2DEC.....252	W6NHA.....230
W9HUZ.....280	G3DO.....252	W8VDJ.....230
W9KOK.....280	W1MV.....251	W9BCL.....230
CE3AG.....280	W6NCA.....251	CR6BX.....227
W1JYH.....277	W0QDF.....251	W4AZK.....226
W7FZA.....273	GM3EST.....251	W5HDS.....226
VE2DI.....271	W4AAU.....250	K6ENL.....226
W3EYV.....271	W5NW.....250	W1ICP.....224
W5KC.....271	W9UXO.....250	W6DBP.....224
W6LDD.....271	W9VHM.....250	W3RNQ.....223
W0QVZ.....271	W2ZGR.....249	W1RB.....222
W8TMA.....270	W8CLR.....249	W3MDE.....222
H89J.....270	W4CFD.....243	W4BQY.....222
W0DAE.....269	W6VZ.....241	K4VJ.....222
W7ENW.....268	W5OGS.....241	W5LGG.....222
W9AMU.....266	W6ID.....241	W9UIG.....222
W6DU.....266	W8CLK.....241	W3MDE.....221
W4QCV.....265	W2BBS.....240	W7GHR.....221
W4HA.....264	K20EA.....240	PA0FX.....221
W9NTA.....264	W2YTH.....240	W1TX.....220
W2LV.....261	W4CY.....240	W3JMV.....220
W6TYQ.....261	W6CAE.....240	W2SSC.....220
W2CNT.....260	W6GME.....240	W5HJA.....220
K2GMO.....260	W1FZ.....235	W8GQP.....220
K6EXC.....260	W5FNN.....235	W3V.....220
W8SYC.....260	W7HKT.....234	W7AUS.....220
DL7AA.....260	W0BFB.....234	W0YCR.....218
W4EPA.....259	W3WGH.....233	ON4DM.....217
W8KPI.....256	W2STC.....233	ZL1AH.....217
W1WZ.....255	W98FR.....232	W7BGH.....216
W4GNB.....255	W0ANF.....232	W6GNG.....215
WSPUD.....255	K6BPM.....231	W4VJ.....214
W9YXN.....255	SM7QV.....231	W1NLM.....213
W5U.....254	ZL2HP.....231	W2DSU.....211

W6PLK.....211	W10OS.....171	VE7CE.....133
TC9AD.....211	W9IQF.....171	W6CBE.....131
W1BGA.....210	W1AW.....170	W8VOW.....131
W2E8O.....210	W2AXR.....170	VE7HE.....131
W2HTL.....210	W3AYD.....170	W1C8C.....130
PA0TAA.....210	W6G8L.....170	W1BQA.....125
VE3ES.....210	F08AP.....170	K2MGR.....130
ZL3GU.....210	IS1FC.....170	K2SHZ.....130
W9KA.....204	W8S8C.....166	K2UTL.....130
W9RQM.....202	I1UA.....164	K2VTL.....130
W9WFS.....202	K9ECO.....162	W9FYM.....130
K4GEZ.....201	W6OF.....162	W08LB.....130
K4PDV.....200	K2JGG.....161	OK1AEH.....130
W5DA.....200	W9WHY.....161	SM5KG.....130
W8WFB.....200	4X4CJ.....161	G2APQ.....127
W9R0U.....200	VE2WA.....160	W3OVE.....126
W9MLV.....200	VE2YA.....160	SP8HS.....126
KR6AC.....200	VE3HB.....160	W9TPA.....125
VE3PK.....200	W1EFC.....156	K2YOR.....124
VE7YC.....200	W8RLA.....155	W4QC1.....124
W2AYO.....199	W8GB.....155	W2KRJ.....123
W9QNO.....196	W8YCP.....155	W3HTE.....123
W8WT.....192	VEJR.....155	K4QJ.....123
W9QA.....192	W2PTD.....154	W10HA.....121
W1RAN.....191	W1ACB.....153	W4HZZ.....121
W2BUI.....191	OH2LX.....153	W0QPL.....121
SM5BE.....191	W1JTD.....152	K5DKE.....120
VE3DKY.....191	W1RWS.....152	K5BBD.....120
K2LWR.....190	W6FLT.....152	W6JH.....120
W2PZL.....190	W2ZY.....151	W8DUA.....120
W3DDX.....190	K8DQJ.....151	W4QCL.....120
W3MJE.....190	G3DQC.....151	W0VFE.....120
W3MLW.....190	ZL3IA.....151	CR7BN.....120
K4HFS.....190	W10OA.....150	G3KZL.....120
W3DA.....190	W3MGC.....150	R4OMR.....119
W9FVU.....190	W9QVF.....150	W6YET.....118
G6VQ.....189	G9QVQ.....150	W7PB.....116
W3ADP.....187	VE3EE.....150	W4QCL.....116
W3AOH.....184	W3KHU.....146	K5IIN.....113
W2QKJ.....182	W3SKQ.....141	W2WMG.....112
W6MTF.....182	W9LQF.....141	K6IXS.....112
W1QMM.....182	D3KR.....141	W8JL.....112
W4JFE.....181	W4YHF.....140	W4NSR.....111
W5PM.....181	W5AUJ.....140	K0ESH.....111
W6RAN.....181	K6K1.....140	W2BAC.....110
W9N1L.....181	W6MUM.....140	W8MNS.....110
W0FNN.....181	W7YOA.....140	W4UHC.....110
W0BKB.....181	W81B.....140	K6RX.....110
VE3EF.....180	W7TIN.....140	G6HJL.....110
W9ALI.....180	W9LSV.....140	W7CMO.....110
W9GFI.....180	SM5LN.....140	W7IAM.....110
W0H1N.....180	VE2DR.....140	W7PK.....110
W9W7S.....173	W8WZP.....138	W7RY.....110
W6ZMN.....172	W6KXG.....135	W7TPE.....110
ON4MS.....177	K6TNA.....135	W9GK.....110
W9W7S.....173	W3MSR.....134	K0TFE.....110
W6ZMN.....172	W6YC.....133	K0TFE.....110
PY5UG.....172	W8TQY.....133	KH6EQ.....110

Radiotelephone

W8QJR.....251	CE3DY.....186	ON4MS.....156
W8CAS.....244	W4CFD.....182	W3JCJ.....151
W8QJR.....244	W4CFD.....182	W3MNS.....150
CO2BK.....239	W1FZ.....181	W3AOH.....146
TE2HP.....236	W1DCE.....180	W3ICQ.....144
W3CHD.....240	W6CNG.....182	W8MNS.....140
G3DO.....230	W8PUD.....180	OE3ME.....142
H89J.....223	G3BUD.....180	W2QKJ.....141
W8JN.....221	W8TMA.....177	MP4BRW.....141
W8ASG.....220	W8BGU.....174	W4KW.....138
ZL1KG.....220	W8JNM.....173	W1JYH.....134
W5YLL.....217	W9HP.....170	W3WGH.....133
W2WZ.....216	W8QVZ.....170	G5LN.....132
VE3QA.....216	E4ZB.....170	W0MLY.....131
W4TO.....213	ON4YI.....170	W1BAN.....130
W4ESP.....210	W0FUF.....167	DL6PC.....130
W5KBU.....210	W0HFB.....164	C2APQ.....123
W4EFE.....208	K6LAS.....162	W2DSU.....125
ON4DM.....206	I1UA.....161	K5JEA.....124
TE2LA.....203	K6EVR.....160	W3FCG.....122
W9QA.....202	W9PQA.....160	CE3AG.....117
W2ZX.....201	DL7AA.....158	W2EQJ.....113
W8CLR.....201	W2DEC.....156	VE5JV.....113
CR6BX.....194		W10HA.....111

U. S.-Canada Area and Continental Leaders

W4TO.....283	VE2WW.....249	VE7ZM.....269
W0ELA.....277	VE3DIF.....230	VE5AW.....195
KL7PI.....202	VE4NO.....180	VOIDX.....211
VE1EP.....220	VE5JY.....173	4X4DK.....276
VE1PQ.....220	VE6NX.....171	Z8GBW.....282

Radiotelephone

W2BKA.....249	W1AW.....190	VE5RU.....156
W4HA.....241	KL7AFR.....190	VE8NX.....132
W4DGH.....241	VE1NH.....122	VE7ZM.....241
W5BBD.....231	W2PPI.....176	W8JL.....125
W7PHO.....242	VE3EK.....224	4X4DK.....268
	VE4RP.....102	

SCM AREC QRS CP SEG OBS YCC OO
Station Activities
 OBS AIOPR EC DXCC CLUBS RM OPS RCC

• All operating amateurs are invited to report to the SCM on the first of each month, covering station activities for the preceding month. Radio Club news is also desired by SCMs for inclusion in these columns. The addresses of all SCMs will be found on page 6.

ATLANTIC DIVISION

EASTERN PENNSYLVANIA—SCM. Richard B. Mesirov, W3JNQ—RM: AXA. PAM: TEJ. The PFN meets every night Mon. through Fri. at 1800 on 3850 kc. E. Pa. meets every night Mon. through Fri. at 1830 on 3610 kc. DVB resigned as SEC and KFI resigned as EC for Lancaster Co. DJW has been using a tape recorder for his OBS skeds. GYP caught the messes during the c.w. DX contest. New officers of the LRTS are MZI, pres.; ATW, vice-pres.; IYF, treas.; OY, secy. Officers of the newly-formed Elizabethtown ARS are SOM, pres.; MFW, vice-pres.; K3EJM, secy.; UOU, treas. The Delaware Valley ARC conducts code and theory classes under the direction of President UZO and Treasurer APD. ADE has a new HQ-160. UIU competed in YL-OM Contest. K3AHT attended the ESN Convention and has a 35-w.p.m. sticker. JPV made WAS. EU has an option to buy a 32-acre antenna farm. K3ANU was in the YL-OM Contest. FKE was QRT because of the flu. WHK attended the ESN Convention also and handles his traffic on holidays only. CUL is a sked with Greenland, which has been 100 per cent to date, but took time off from traffic to compete in the YL-OM Contest. NF has a new 600-watt p.p., 813 final. FCI is waiting to enter college in September and plans to operate from Beach Haven again this summer. FEY is building a parametric amplifier for 2 meters and hopes to have it ready for the June V.H.F. Party to operate from Vermont. K3DZN has a new 40-meter dipole. CMN still is collecting coins while trying to debug his rig. KJJ reports organization of a new club in the Tanawaga Area. K3DVB curtailed his OO work because of school. EAN has worked about 115 USSR stations this year. MGP received a W-Conn Award. HNK is moving to Philadelphia. The Carbon Co. RACES Net meets Mon. and Thurs. at 2000 on 145.380 Mc., according to BNR. K3ALD made DXCC. BES rolled up 800 contacts in the c.w. DX Test with a new Mosley tri-band beam. His first QSO with a DSB 100 was with Gen. Hap Arnold. PLI made WAS with a Mississippi card. JGW added a 4th harmonic to his family—a YL. YA was guest speaker at the Bucks County ARC Banquet. Traffic: (Mar.) W3CUL 3017, 1VS 168, K3AHT 125, ANU 110, W3ZRQ 105, K3ANS 81, ASH 81, W3WPF 77, ZLP 68, WHK 61, VR 52, K3BKT 46, W3BFF 44, BUR 36, FKE 36, TEJ 34, UIU 29, HNK 28, K3DPS 22, W3MDM 22, NF 19, K3CVH 15, LZB 12, DZN 12, ALD 9, W3DHA 8, OUV 7, PDJ 7, K3AFW 6, W3NQB 6, ADE 4, AMC 4, GIU 4, ELI 3, FCI 3, BES 2, (Feb.) W3WHK 25, K3GTZ 1.

MARYLAND-DELAWARE-DISTRICT OF CO. LUMBAR—SCM. Arthur W. Plummer, W3EQK—Asst. SCM Delaware: Ray DeCourceille, 3DQZ. SEC: PKC. YVB is no longer SEC, so contact PKC on SEC matters. Section nets: MIDD, 3650 kc. M-S 1915; MEFPN 3820 kc.; MWF 1800, SS 1300; Del EN 3905 kc. Sat, 1830; Md. 6-Meter EN 50.25 Wed. 2100; BEPN 3825 kc. MWF 1830, SS 1330. Present RCARA officers are MKS, pres.; PZZ, 1st vice-pres.; MUA, 2nd vice-pres.; CJM, secy.; FWP, treas. BUD has joined Army MARS. CN is now mobile Elmira-wise and not operating from home too much. MSR reports a new cubical quad tri-band up on the tower that blew over in January. CQD still is ragchewing her way along. TN made his highest BPL total yet—174! JME reports the BCEN meets at 2130 the 3rd Mon. of each month on 29.25 Mc. EKO reports he will be on all c.w. bands with a kw. rig. CBJ soon will be a new AREC member. GXP is the call of the Fort Howard Amateur Radio Club at Fort Howard Veterans' Hospital and the club soon will be on the air with a KWS-1 and a BC-610

converted to w.s.b. BVL reports that B4ORR certificate No. 3 went to FFO. The B4ORRARC now has a net that meets Wed. at 0600 on 3925 kc. JST was guest speaker at the WAYLARC March meeting. At the April meeting held at the home of RXJ the guest speaker was 4TVT, who spoke on Trinidad. AKB reports working seven days a week but did manage to get on the air for the LO Party and worked around the country on 80-meter c.w. in about two hours. RXJ learned a lot about gold- and uranium-mining from a ZS6 recently. UTR reports that K0LYV plans to move from Iowa to Dallas this summer. TSC has qualified for WAC on 20- and 40-meter c.w. RV, of the Air Force, is awaiting a KL7 call. ZA still is in Saigon and awaiting a new call. He will return in June for three months, then will go back to XV5-Land for two more years. DHQ should be in operation soon with RTTY. ECP has been visiting Down South. MKS was guest speaker at the newly-formed Free State Amateur Radio Club at Fort George G. Meade. K3BEG, of which NNM is pres. LUL has great plans for this year's Field Day for the CARC. K3DNU is having a ball on s.s.b. IRA worked Canton Island on 20-meter s.s.b. Chris is the reason for the big smile and the cigars at YVO's. BDY is the proud papa of Gosnet Twins, and incidentally this is the first time Al has made this column since 1990! CAY is waiting for his 758-1 and 325-1. YVF will be entering medical school in September. JCL is the proud owner of a KW1 converted to s.s.b. Incidentally, fellows, activity in s.s.b. in Baltimore is booming. PRL is now pres. of the NFAIRC and YVB is vice-pres. Lots of the boys are readying their mobiles for spring and summer operation. Hot coffee and buns are always on tap at JCL's place, which has become a place to congregate and chew the rag, especially on Saturdays. A transmitter and receiver are there for those who wish to operate. EQK wishes to take this opportunity to thank all those who voted for him as SCM for the Md.-Del.-D.C. section for the next two years and will do his level best to serve you promptly and satisfactorily. Thanks again all of you. Traffic: W3UE 509, K3WBW 282, W3TN 174, BUD 156, PQ 78, AHQ 67, QCW 41, CN 32, WSE 5.

SOUTHERN NEW JERSEY—SCM. Herbert C. Brooks, K2BG—SEC: W2YRW. RMs: W2BZJ, W2HDW, W2YRW and W2ZL. Endorsement this month: W2BEI, Audubon, as ORS and OPS. We hear B is vice-pres. Lots of this month—K2PGB Hopewell and K2LEM in Trenton. K2OOK's air time is limited because of college. W2ZJ reports the following newly-elected DVRA officers: W2JBF, pres.; W2BZJ, secy.; W2UAE, vice-pres.; and W2WOA, treas. K2PTJ reports increasing activity on the Del. Valley 2-Meter Traffic Net. K2CPR, Pennsauken, has received the following awards: H-22, WAGM, WAZ and 5-band WAS; he also has a DXCC total of 218/235. K2SOW is attending college at Exeter, N. H. W2HDW, Somerville, is rebuilding and will be back on NJN soon. Congrats to W2RXL, NJN manager, on another fine net bulletin. The net needs more QNs from the southern counties. Burlington Co. Radio Club members recently visited the new county RACES Headquarters station in Mt. Holly. W2DMR, Palmyra, and ZL3JO continue their nightly 40-meter sked. W3OUY is being transferred to RCA. Somerville, Ken will be missed at SJRA. W2QHI, Harmonica editor, recently made a trip to California and visited the North Hills Radio Club. The Gloucester Co. Radio Club membership is increasing. Contact K2JJC for information on the meeting place and date. K2CPR, W2KFC and K2YBN, Official Observers, are doing fine work. K2HOD, Delanco, continues to add support to his efforts to obtain favorable legislation to obtain call letters on our auto tags. Traffic: (Mar.) W3RG 172, W2BZJ 138, K2JGU 133, K2OOK 30, W2Z1 24, K2PTJ 20, K2CPR 7, W2BEI 4, K2SOW 4. (Feb.) K2OOK 5.

WESTERN NEW YORK—SCM. Charles T. Hansen, K2HUK—SEC: W2GBX. RMs: W2RUF and W2ZRC. PAMs: W2PVI and W2LXE (v.h.f.). NYS c.w. meets on 3615 kc. at 1800, ESS on 3590 kc. at 1800, NYS/TPEN on 3925 kc. at 1800, NYS C.D. on 3590.5 and 3990.5 at 0900 Sun. TCPN 2nd call area on 3970 kc. at 1900. IPN on 3980 kc. at 1600. We are pleased to announce appointment of K2EED as EC for Warren and Washington Co. and K2PII as EC for Essex Co. K2LGI was endorsed as OO. Congratulations to K2SIL, W2RUF and K2SSX on making the BPL in March. An NYS c.w. certificate was earned by K2HYN. The Six-Meter Mobile Assn. of W.N.Y. (Buffalo) has announced the following new mem-

PACIFIC NET RE-ESTABLISHED

Another in a series of informational articles presented by The Hallicrafters Company as a service to amateur radio.

THE Pacific Traffic Net was re-established a few months ago for the purpose of passing traffic to and from the states. This enables members of our armed services and others presently at the overseas commands to talk to or to pass messages to their loved ones, friends or to mend important personal problems at home.

THE Pacific Net meets seven nights weekly at 0700 GMT on 14,240, with KX6BT on Eniwetok Island acting as present Net Control Station. The Net is represented by Hawaii, Guam, Caroline Islands, Kwajalein, Midway, Johnston, Okinawa and others who serve many thousands of square miles in the Pacific. The Net passes traffic and accepts traffic for necessary delivery from any station to any address in the Pacific area.

THE Net is capable of handling considerably more traffic than it is currently accommodating, and we would like to invite hams everywhere to take full advantage of its facilities. Any station with traffic for the Pacific area may pass this traffic on to us for necessary action and delivery accordingly. The Net welcomes these messages from any and all stations.

ANNOUNCING — HALLCRAFTERS SSB—VHF CONTEST WINNERS!

Congratulations to the following named hams for submitting the winning entries in Hallicrafters' SSB-VHF Contest:

J. W. Brantner, W8BCK
FPM-200

Donald W. Richards, W7UPE
HT-33A

Robert W. Dorn, W8SQK
HT-32A

Jack C. Baker, KL7SC-W7SXT
SR-34

Wendall S. Johnson, KH6CZC
SX-101

THE Net does not discourage those who desire contact with us only for the purpose of obtaining a new country, although we request that these stations stand by until the Net has handled its traffic. The Net will be more than happy to stand by for DX Hunting stations when the Net has completed its traffic. The Net would appreciate comments, information or calls of any stations in the states interested in handling traffic for the Pacific Net, or from those of you who would like to pass traffic to us for handling on a regular basis. All correspondence may be forwarded to L. F. McCullough, DET COMBAPAC, Navy #3080, FPO San Francisco for necessary action.

L. F. McCULLOUGH, KM6BL
for The Pacific Traffic Net

Beul Bailey Jr. W. J. Haegean W9AC for hallicrafters

WHETHER THEY OPERATE PORTABLE... OR FROM THE HOME QTH...



NEW CATALOG!

Yes, dollar-for-dollar and feature-for-feature you'll get more of everything in a Viking transmitter... that's why Viking transmitters outsell all others! Write for your free Viking Amateur Equipment Catalog and you'll soon see why your best transmitter buy is a Viking!



NEW!...

"NAVIGATOR" TRANSMITTER/EXCITER

More than a novice transmitter—serves as a flexible VFO-Exciter with enough RF power to excite most high powered amplifiers on CW and AM! 40 watts CW input—6146 final amplifier tube—wide range pi-network output. Built-in VFO or crystal control—bandswitching 160 through 10. Timed sequence keying. TVI suppressed. With tubes, less crystals.

Cat. No.	Amateur Net
240-126-1...Kit	\$149.50
240-126-2...Wired and tested	\$199.50

"ADVENTURER" TRANSMITTER

Perfect for novice or experienced amateur! 50 watts CW input—instant bandswitching 80 through 10 meters. Crystal or external VFO control. With tubes, less crystals.

Cat. No.	Amateur Net
240-181-1...Kit	\$54.95

"CHALLENGER" TRANSMITTER

Ideal for fixed station or portable use! Fast, easy tuning—excellent stability and plenty of reserve drive. 70 watts phone input 80 through 6; 120 watts CW input 80 through 10... 85 watts CW input on 6 meters. Wide-range pi-network output—effectively TVI suppressed—excellent keying system. For crystal or external VFO control. With tubes.

Cat. No.	Amateur Net
240-182-1...Kit	\$114.75
240-182-2...Wired	\$154.75

"6N2" CONVERTER

This compact Viking "6N2" Converter provides instant front panel switching from normal receiver operation to either 6 or 2 meters. Maximum sensitivity and low noise figure... offers excellent image and I.F. rejection. With tubes. Available kit or wired in either 26 to 30 mcs., 28 to 30 mcs., 14 to 18 mcs., or 30.5 to 24.5 mcs. ranges. Specify range desired.

Kits	Amateur Net
Wired Models	\$59.95
	\$89.95

E. F. JOHNSON COMPANY

2807 SECOND AVENUE S.W.

Viking Transmitters outsell all others!



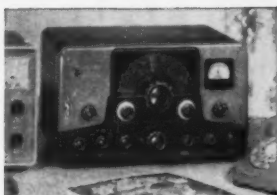
600 watts CW... 500 watts phone... 500 watts SSB*!
More than one-half kilowatt of power
and operating convenience!

"FIVE HUNDRED" TRANSMITTER — A complete 500 to 600 watt transmitter for the 80 through 10 meter amateur bands, the Viking "Five Hundred" is superbly engineered and designed throughout for outstanding operating convenience and flexibility. Two compact units: RF unit is small enough to place on your operating desk beside your receiver — power supply/modulator unit may be placed in any convenient location.

All exciter stages ganged to VFO tuning — operates by either crystal or built-in VFO control. Instant bandswitching 80 through 10 meters — effectively TVI suppressed — high gain push-to-talk audio system — low level audio clipping. 600 ohm phone patch input is independent of audio gain control — speech filter restricts frequency response to 200-3500 CPS for maximum communication effectiveness with minimum bandwidth. Final amplifier uses a Type 4-400A high efficiency tetrode. Pi-network output circuit with silver-plated final tank coil will load virtually any antenna system. Complete with tubes, less crystals.

Cat. No. 240-500-1...Kit.....\$749.50 Amateur Net
 Cat. No. 240-500-2...Wired and tested.....\$949.50 Amateur Net

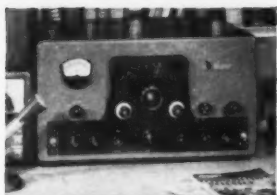
*With an auxiliary SSB exciter



"RANGER" TRANSMITTER/EXCITER

This popular, superbly engineered transmitter also serves as an RF/audio exciter for high power equipment. 75 watts CW or 65 watts phone input. Built-in VFO or crystal control — instant bandswitching 160 through 10. 6146 final amplifier — wide range pi-network output. Timed sequence keying. TVI suppressed. With tubes, less crystals.

Cat. No. **Amateur Net**
 240-161-1...Kit.....\$229.50
 240-161-2...Wired and tested...\$329.50



"VALIANT" TRANSMITTER

Here's effective power, wide flexibility, and many unique operating features combined in a compact desk-top transmitter! 275 watts input CW and SSB (P.E.P. with auxiliary SSB exciter) and 200 watts phone. Bandswitching 160 through 10. Built-in VFO or crystal control. Final amplifier utilizes three 6146 tubes in parallel — wide range pi-network output. With tubes, less crystals.

Cat. No. **Amateur Net**
 240-104-1...Kit.....\$349.50
 240-104-2...Wired and tested...\$439.50

Viking

FIRST CHOICE AMONG THE NATION'S AMATEURS

WASECA, MINNESOTA

BUILD YOUR OWN



HAM GEAR



HEATHKIT HAM EQUIPMENT
IS DESIGNED BY HAMS
WHO KNOW YOUR
PROBLEMS AND
NEEDS.

PROVEN, "ON THE AIR"
PERFORMANCE



"SENECA" VHF HAM TRANSMITTER KIT

Beautifully styled and a top performer of highest quality throughout. The "Seneca" is a completely self-contained 6 and 2 meter transmitter featuring a built-in VFO for both 6 and 2 meters, and 4 switch-selected crystal positions, 2 power supplies, 5 radio frequency stages, and 2 dual-triode audio stages. Panel controls allow VFO or crystal control, phone or CW operation on both amateur bands. An auxiliary socket provides for receiver muting, remote operation of antenna relay and remote control of the transmitter such as with the Heathkit VX-1 Voice Control. Features up to 120 watts input on phone and 140 watts on CW in the 6 meter band. Ratings slightly reduced in the 2 meter band. Ideal for ham operators wishing to extend transmission into the VHF region. Shpg. Wt. 56 lbs.



HEATHKIT VHF-1 **\$159⁹⁵**



HEATHKIT DX-20 **\$35⁹⁵**

DX-20 CW TRANSMITTER KIT

Designed exclusively for CW work, the DX-20 provides the novice as well as the advanced-class CW operator with a low cost transmitter featuring high operating efficiency. Single-knob bandswitching covers 80, 40, 20, 15 and 10 meters using crystals or an external VFO. Pi network output circuit matches antenna impedances between 50 and 1,000 ohms. Employs a single 6DQ6A tube in the final amplifier stage for plate power input of 50 watts. A 6CL6 serves as the crystal oscillator. The husky power supply uses a heavy duty 5U4GB rectifier and top-quality "potted" transformer for long service life. Easy-to-read panel meter indicates final grid or plate current selected by the panel switch. Complete RF shielding to minimize TVI interference. Easy-to-build with complete instructions provided. Shpg. Wt. 19 lbs.

HEATH COMPANY Benton Harbor, Michigan



a subsidiary of Daystrom, Inc.

Mobile Gear...for the Ham on the Go!

"CHEYENNE" MOBILE HAM TRANSMITTER KIT

All the fun and excitement... plus the convenience of mobile operation are yours in the all-new Heathkit "Cheyenne" transmitter. The neat, compact, and efficient circuitry provides you with high power capability in mobile operation, with low battery drain using carrier controlled modulation. All necessary power is supplied by the model MP-1 described below. Covers 80, 40, 20, 15 and 10 meters with up to 90 watts input on phone. Features built-in VFO, modulator, 4 RF stages, with a 6146 final amplifier and pi network (coaxial) output coupling. High quality components are used for long service life and reliable operation, along with rugged chassis construction to withstand mobile vibrations and shock. Thoughtful circuit layout provides for ease of assembly with complete instructions and detailed pictorial diagrams to insure success. A spotting switch is also provided. A specially designed ceramic microphone is included to insure effective modulation with plenty of "punch". Plan now to enjoy the fun of mobile operation by building this superb transmitter. Shpg. Wt. 19 lbs.



HEATHKIT MT-1

\$99⁹⁵



"COMANCHE" MOBILE HAM RECEIVER KIT

Everything you could ask for in modern design mobile gear is provided in the "Comanche"... handsome styling, rugged construction, top quality components... and, best of all, a price you can afford. The "Comanche" is an 8-tube super-heterodyne ham band receiver operating AM, CW and SSB on the 80, 40, 20, 15 and 10 meter amateur bands. A 3 mc crystal lattice-type IF filter permits the receiver to use single conversion without image interference, and at the same time creates a steep sided 3 kc flat top IF bandpass characteristic comparable to mechanical type filters. The neat, compact and easy-to-assemble circuitry features outstanding sensitivity, stability and selectivity on all bands. Circuit includes an RF stage, converter, 2 IF stages, 2 detectors, noise limiter, 2 audio stages and a voltage regulator. Sensitivity is better than 1 microvolt on all bands and signal-to-noise ratio is better than 10 db down at 1 microvolt input. One of the finest investments you can make in mobile gear. Shpg. Wt. 19 lbs.



HEATHKIT MR-1

\$119⁹⁵

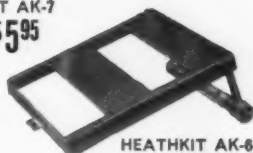
MOBILE SPEAKER KIT

A matching companion speaker for the "Comanche" mobile receiver. Housed in a rugged steel case with brackets provided for easy installation on fire wall or under dashboard, etc. Uses 5 PM speaker with 8 ohm voice coil. Measures 5" H. x 5" W. x 2 1/2" D. Shpg. Wt. 4 lbs.



HEATHKIT AK-7

\$5⁹⁵

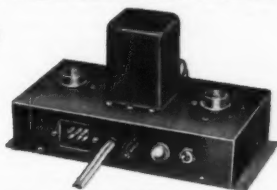


HEATHKIT AK-6

\$4⁹⁵

HEATHKIT MP-1

\$44⁹⁵



MOBILE POWER SUPPLY KIT

This heavy duty transistor power supply furnishes all the power required to operate both the MT-1 Transmitter and MR-1 Receiver. It features two 2N442 transistors in a 400 cycle switching circuit, supplying a full 120 watts of DC power. Under intermittent operation it will deliver up to 150 watts. Kit contains everything required for complete installation, including 12' of heavy battery cable, tap-in studs for battery posts, power plug and 15' of connecting cable. Chassis size is 9 1/16" L. x 4 3/4" W. x 2" H. Operates from 12-14 volt battery source. Circuit convenience provided by self-contained relay which allows push-to-talk mobile operation. Shpg. Wt. 8 lbs.

MOBILE BASE MOUNT KIT

The AK-6 Base Mount is designed to hold both transmitter and receiver conveniently at driver's side. Universal mounting bracket has adjustable legs to fit most automobiles. Shpg. Wt. 5 lbs.

POWER METER KIT

This handy unit picks up energy from your mobile antenna and indicates when your transmitter is tuned for maximum output. A variable sensitivity control is provided. Features a strong magnet on a swivel-mount for holding it on a car dashboard or other suitable spot. Has its own antenna or may be connected to existing antenna. Sensitive 200 ua meter. Shpg. Wt. 2 lbs.

HEATHKIT PM-2

\$12⁹⁵





COMPANION UNITS



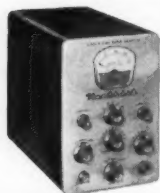
HEATHKIT TX-1 **\$234⁹⁵**

"APACHE" HAM TRANSMITTER KIT

The many features and modern styling of the "Apache" will provide you with just about everything you could ask for in transmitting facilities. Emphasizing high quality the "Apache" operates with a 150 watt phone input and 180 watt CW input. In addition to CW and phone operation, built-in switch selected circuitry provides for single-sideband transmission using the SB-10 External adapter. The newly designed, compact and stable VFO provides low drift frequency control necessary for SSB transmission. A slide rule type illuminated rotating VFO dial with full gear drive vernier tuning provides ample bandspread and precise frequency settings. The bandswitch allows quick selection of the amateur bands on 80, 40, 20, 15 and 10 meters. This unit also has adjustable low-level speech clipping and a low distortion modulator stage employing two of the new 6CA7/EL34 tubes in push-pull class AB operation. Time sequence keying is provided for "chirpless" break-in CW operation. The final amplifier is completely shielded for TVI protection and neutralized for greater stability. A cooling fan is also provided. The formed one-piece cabinet with convenient access hatch provides accessibility to tubes and crystal sockets. Die-cast aluminum knobs and control panel escutcheons add to the attractive styling of the transmitter. Pi network output coupling matches antenna impedances between 50 and 72 ohms. A "spotting" push button enables the operator to "zero beat" an incoming frequency without putting the transmitter on the air. Equip your ham shack now for top transmitting enjoyment with this outstanding unit. Shpg. Wt. 110 lbs. Shipped motor freight unless otherwise specified.

HEATHKIT SB-10 SINGLE SIDEBAND ADAPTER KIT

\$89⁹⁵



Designed as a compatible plug-in adapter unit for the TX-1 "Apache" transmitter, this unit lets you operate on SSB at a minimum of cost, yet does not affect the normal AM and CW functions of the transmitter. By making a few simple circuit modifications, the DX-100 and DX-100-B transmitters can be used, utilizing all existing RF circuitry. Extremely easy to operate and tune, the adapter employs the phasing method for generating a single-sideband signal, thus allowing operation entirely on fundamental frequencies. The critical audio phase shift network is supplied completely preassembled and wired in a sealed plug-in unit. Produces either a USB, LSB or DSB signal, with or without carrier insertion. Covers 80, 40, 20, 15 and 10 meter bands. An easy-to-read panel meter indicates power output to aid in tuning. A built-in electronic voice control with anti-trip circuit is also provided. 10 watts PEP output. Unwanted sideband suppression is in excess of 30 db and carrier suppression is in excess of 40 db. An EL84/6BQ5 tube is used for linear RF output. Shpg. Wt. 12 lbs.

MODIFICATION KIT: Modifies DX-100 and DX-100-B for use with the SB-10 Adapter. Model MK-1. Shpg. Wt. 1 lb. **\$8.95**.



HEATHKIT AR-3

\$29⁹⁵

(less cabinet)

ALL-BAND RECEIVER KIT

A fine receiver for the beginning ham or short wave listener, designed for high circuit efficiency and easy construction. Covers 550 kc to 30 mc in four bands clearly marked on a slide-rule dial. Transformer operated power supply. Features include: bandswitch, bandspread tuning, phone-standby-CW switch, phone jack, antenna trimmer, noise eliminator, RF gain control and AF control. Shpg. Wt. 12 lbs.

CABINET: Opt. extra. No. 91-15A. Shpg. Wt. 5 lbs. \$4.95.



HEATHKIT QF-1

\$9⁹⁵

"Q" MULTIPLIER KIT

Useful on crowded phone and CW bands, this kit adds selectivity and signal rejection to your receiver. Use it with any AM receiver having an IF frequency between 450 and 460 kc that is not AC-DC type. Provides an effective "Q" of approximately 4,000 for extremely sharp "peak" or "null". The QF-1 is powered from the receiver with which it is used. Shpg. Wt. 3 lbs.

OF DISTINCTIVE QUALITY

ACCESSORY SPEAKER KIT

Handsomely designed and color styled to match the "Mohawk" receiver this heavy duty 8" speaker with 4.7 ounce magnet provides excellent tone quality. Housed in attractive 3/4" plywood cabinet with perforated metal grille. Speaker impedance is 8 ohms. Shpg. Wt. 7 lbs.



HEATHKIT AK-5
\$9⁹⁵



HEATHKIT RX-1 **\$274⁹⁵**

"MOHAWK" HAM RECEIVER KIT

Styled to match the "Apache" transmitter the "Mohawk" ham band receiver provides all the functions required for clear, rock-steady reception. Designed especially for ham band operation this 15-tube receiver features double conversion with IF's at 1682 kc and 50 kc and covers all the amateur frequencies from 160 through 10 meters on 7 bands with an extra band calibrated to cover 6 and 2 meters using a converter. Specially designed for single sideband reception with crystal controlled oscillators for upper and lower sideband selection. A completely preassembled wired and aligned front end coil bandswitch assembly assures ease of construction and top performance of the finished unit. Other features include 5 selectivity positions from 5 kc to 500 CPS, bridge T-notch filter for excellent heterodyne rejection, and a built-in 100 kc crystal calibrator. The set provides a 10 db signal-to-noise ratio at less than 1 microvolt input. Each ham band is separately calibrated on a rotating slide rule dial to provide clear frequency settings with more than ample bandspread. Front panel features S-meter, separate RF, IF and AF gain controls, T-notch tuning, T-notch depth, ANL, AVC, BFO, Bandswitch tuning, antenna trimmer, calibrate set, calibrate on, CW-SSB-AM, receive-standby, upper-lower sideband, selectivity, phone jack and illuminated gear driven vernier slide rule tuning dial. Attractively styled with die-cast aluminum control knobs and escutcheons. No external alignment equipment is required for precise calibration of the "Mohawk". All adjustments are easily accomplished using the unique method described in the manual. An outstanding buy in a communications receiver. Shpg. Wt. 66 lbs. Shipped motor freight unless otherwise specified.



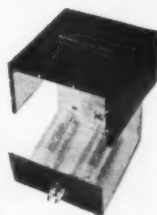
HEATHKIT AM-2
\$15⁹⁵

REFLECTED POWER METER KIT

The AM-2 measures forward and reflected power or standing wave ratio. Handles a peak power of well over 1 kilowatt of energy and covers 160 through 6 meters. Input and output impedance provided for 50 or 75 ohm lines. No external power required for operation. Use it also to match impedances between exciters or RF sources and grounded grid amplifiers. Shpg. Wt. 3 lbs.

BALUN COIL KIT

Match unbalanced coaxial lines, found on most modern transmitters, to balanced lines of either 75 or 300 ohms impedance with this handy transmitter accessory. Capable of handling power input up to 200 watts, the B-1 may be used with transmitters and receivers covering 80 through 10 meters. No adjustment required. Shpg. Wt. 4 lbs.



HEATHKIT B-1
\$8⁹⁵



HEATHKIT VX-1
\$23⁹⁵

ELECTRONIC VOICE CONTROL KIT

Eliminate hand switching with this convenient kit. Switch from receiver to transmitter by merely talking into your microphone. Sensitivity controls allow adjustment to all conditions. Power supply is built in and terminal strip on the rear of the chassis accommodates receiver and speaker connections and also a 117 volt antenna relay. Shpg. Wt. 5 lbs.



HEATHKIT VF-1
\$19⁵⁰

VFO KIT

Far below the cost of crystals to obtain the same frequency coverage this variable frequency oscillator covers 160, 80, 40, 20, 15 and 10 meters with three basic oscillator frequencies. Providing better than 10 volt average RF output on fundamentals, the VF-1 is capable of driving the most modern transmitters. Requires only 250 volts DC at 15 to 20 ma, and 6.3 VAC at 0.45 a. Illuminated dial reads direct. Shpg. Wt. 7 lbs.

Save 1/2 or more...with Heathkits



HEATHKIT DX-100-B \$189⁵⁰

DX-100-B PHONE AND CW TRANSMITTER KIT

A long standing favorite in the Heathkit line, the DX-100-B combines modern styling and circuit ingenuity to bring you an exceptionally fine transmitter at an economical price. Panel controls allow VFO or crystal control, phone or CW operation on all amateur bands up to 30 mc. The rugged one-piece formed cabinet features a convenient top-access hatch for changing crystals and making other adjustments. The chassis is punched to accept sideband adapter modifications. Featured are a built-in VFO, modulator, and power supply, complete shielding to minimize TVI, and a pi network output coupling to match impedances from 50 to 72 ohms. RF output is in excess of 100 watts on phone and 120 watts on CW. Band coverage is from 160 through 10 meters. For operating convenience single-knob bandswitching and illuminated VFO dial on meter face are provided. A pair of 6146 tubes in parallel are employed in the output stage modulated by a pair of 1625's. Shpg. Wt. 107 lbs. Shipped motor freight unless otherwise specified.

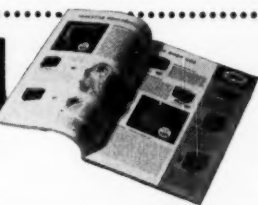


HEATHKIT DX-40 \$64⁹⁵

DX-40 PHONE AND CW TRANSMITTER KIT

An outstanding buy in its power class the DX-40 provides both phone and CW operation on 80, 40, 20, 15 and 10 meters. A single 6146 tube is used in the final amplifier stage to provide full 75 watt plate power input on CW or controlled carrier modulation peaks up to 60 watts for phone operation. Modulator and power supplies are built in and single-knob bandswitching is combined with the pi network output circuit for complete operating convenience. Features a D'Arsonval movement panel meter. A line filter and liberal shielding provides for high stability and minimum TVI. Provision is made for three crystals easily accessible through a "trap door" in the back of the cabinet. A 4-position switch selects any of the three crystals or jack for external VFO. Power for the VFO is available on the rear apron of the chassis. Easy-to-follow step-by-step instructions let assembly proceed smoothly from start to finish even for an individual who has never built electronic equipment before. Shpg. Wt. 25 lbs.

Free Send now for latest Heathkit Catalog describing in detail over 100 easy-to-assemble kits for the Hi-Fi fan, radio ham, boat owner and technician.



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do-it-yourself
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H a subsidiary of Daystrom, Inc.

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All prices and specifications subject to change without notice. Please include postage on orders to be shipped parcel post. 20% deposit is required on all C.O.D. orders. All prices are NET F.O.B. Benton Harbor, Mich., and apply to Continental U.S. and Possessions only.

NAME

ADDRESS

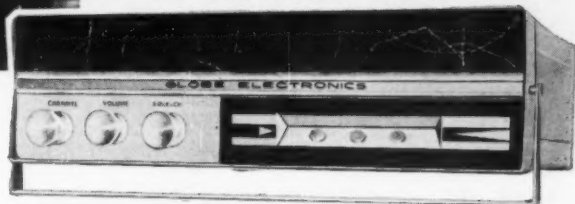
CITY ZONE STATE

QUANTITY	KIT NAME	MODEL NO.	PRICE
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Leo I. Meyerson, W0GFQ, World Radio, Says:

**PAY ONLY \$13⁰⁰ DOWN AND
OWN THIS BEAUTIFUL BRAND NEW
Citizens Broadcaster CB-100**



23 Hams here offer you the best of personalized service. We make same-day shipment from the center of the USA. Easy terms with only 10% down payment. Country's highest trades made. Fast turnover guaranteeing latest serial numbers. All these features and more you'll find when trading with

"the house the hams built"

NEW 6 Meter CONVERTER

FOR FIXED STATION OR MOBILE USE

Improved circuit for higher gain; better signal-to-noise ratio.

Completely shielded.

Highly stable, crystal controlled oscillator.

Printed circuit for ease in kit assembly.

For most receivers on market today; B plus requirements 150-250V at 15-18MA. Provisions for changing filaments for 6 or 12V operation.

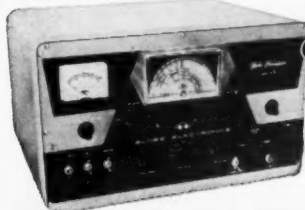
Only 3x5 1/4x4 1/4"; complete with tubes and cable. Available: 6PMC1 for 10-14Mc; 6PMC2 for 600-1600Kc.



WIRED: \$2995 KIT: \$2195

SAMPLING OF LATE RECONDITIONED EQUIPMENT

Mallacrafters 553-A receiver	\$ 69.95
National NC-98 receiver	\$119.00
National NC-125 receiver	\$139.90
National NC-300 receiver	\$299.00
H-W T550 & ac PS (80-2 meter)	\$ 97.00
Heath Q multiplier	\$ 9.95
Globe Scout 680-A transmitter	\$ 29.95
Globe Chief 90A transmitter	\$ 49.50
Heath DX-35 transmitter	\$ 52.50



Net: \$495.00

\$22²⁸

per mo.

with

\$4950

down

NEW Globe Champion 350

- ★ All modern design new cabinet
- ★ New filtered keying circuit virtually eliminates key clicks.
- ★ Improved VFO circuitry for greater stability
- ★ Tailored for more "power punch" in the voice frequency range.
- ★ Adjustable bias control for SB operation
- ★ Improved shielding for TVI-protection and stability, eliminating RF feedback.

The new Globe Champion 350 is bandswitching 10-160M, 350w CW, 275w AM, 450w SSB (PEP), with any 10w external exciter. Extensively TVI-suppressed, filtered and bypassed. High level class B modulation maintained without usual clipping distortion with commercial type compression circuit. Pi-Net output circuit 45-300 ohms, built-in VFO, push-to-talk, antenna changeover relay. Final tubes air-cooled. Single knob bandswitching.

Cabinet 12x21 3/8x17".

Rush your FREE Catalog ☐ and complete info on new ☐ Champ 350, ☐ Citizens Broadcaster, ☐ 6M Converter

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Known World-Wide by its Audio



Globe King 500C

Built-in antenna relay, built-in VFO, separate power supply for modulator. Commercial type compression circuit. Grid block keying for signal clarity. Pi-Net matches most antennas 52-300 ohms. Optional crystal operation. SSB input & operation with 15-20w external exciter. 31x22x14 1/2" cabinet designed for TVI-suppression.

Wired & Tested:
\$788.00

Completely Bandswitching, 10-160M, 540w AM & CW; 700w max. on DSB or SSB (PEP), with 15-20w external exciter.

Tops on 6 and 2M



Globe Hi-Bander

60w CW, 55w AM input on both 6 & 2M. Single control bandswitching. 4-stage RF section allowing straight through operation. Good harmonic and TVI-suppression. RF stages metered. Provisions for mobile use. 52-72 ohm coax output. New duo-band final tank circuit eliminates switching. Variable antenna loading control. Reserve power socket on rear chassis apron for accessories.

Wired & Tested:
\$149.95
In Kit Form:
\$119.95

90w CW



Globe Chief 90A

Completely bandswitching 10-160M. Compact (8 1/2 x 5 1/2"), well-filtered, with built-in power supply. Pi-Net matches most antennas 52-600 ohms. Modified Grid-Block keying. Provisions for VFO input & operation. Can be converted to four with Globe Models UM-1 or SM-90 Modulators. Shielded for TVI-reduction. Kit contains all tubes, pre-punched chassis, etc.

Wired & Tested: **\$74.90**
In Kit Form: **\$59.95**

Modulates RF inputs to 100w



Kit: (less tubes) **\$34.95**
In Wired Form: **\$49.95**

Universal Modulator UM-1

Class A or AB-2 modulator, driver for higher power modulator, or PA amplifier. Matches output impedances 500-20,000 ohms. Carbon or crystal mike usable. Supplies up to 45w audio with proper output tubes. Provisions for addition of external meter for monitoring modulator cathode currents; for remote control of modulator. Perforated steel cover, \$3.00 extra.

New Citizens Broadcaster CB-100

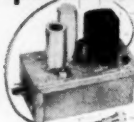
11 M TRANSCEIVER
FOR USE BY ANYONE
NO EXAMINATION
Just fill out FCC Form 505



Complete with Xkula for One Channel & Mike
\$129.95

For home, office, car, boat, field, etc. 115VAC or 12V mobile. Exclusive 3-channel selection switch and button light indicators. Squelch control for muting background noise. 10-tube receiver/transmitter, crystal controlled. AM modulated. Meets all FCC specs. Compact: 31x14x10 1/2"; 8 lbs. Carry handle for tilt stand or permanent mounting.

Speech Booster FCL-1



Wired & Tested:
\$24.95
In Kit Form:
\$18.95

Peak limiting audio preamplifier that clips and filters speech frequencies exceeding pre-set amplitude. Increases modulation intensity for most penetrating audio. Includes harmonic suppression. Plugs directly into Scout & Hi-Bander. Adaptable to other Xmitters.

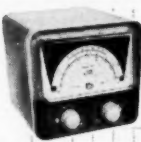
Power Attenuator PA-1



Wired & Tested:
\$10.95

General purpose attenuator for exciters up to 70 watts input. Suitable to attenuate drive between many exciter-amplifier combinations. Standard coax input and output connectors. Tap switch to select any of three attenuation positions or straight through.

Globe VFO 6-2



Wired & Tested:
\$59.95
In Kit Form:
\$49.95

Perfect zero beat. Built-in power supply with voltage regulation. Ideal for driving 6 and 2 meter transmitters. Temperature compensated for utmost stability. Excellent for use with Hi-Bander. Approx. 50V RF output in 8-9 mc. range. 13:1 tuning ratio, king-size tuning scale. Sideband stability.

6M Converter



Wired & Tested:
\$29.95
In Kit Form:
\$21.95
Model 6PMC

New, improved circuit for higher gain, greater signal/noise ratio. Printed circuit for ease in kit assembly. Models for fixed or mobile stations or 12 volt filaments. I.P. output of 10-14 mc. on fixed, 600-1600 kc. on mobile model. Highly stable, completely shielded, crystal controlled, complete with tubes, crystal, cables. 3x3-1/2x4 1/2".



In Kit Form only: **\$11.95**

Screen Modulator SM-90

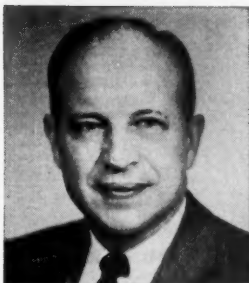
Ideal for use with Chief, but instructions for use with similar CW Xmitters. Permits radio-telephone operation at minimum cost. Self-contained. Printed circuit board, all parts and complete instructions.

Visit Your Favorite Distributor for Details!

OTHER TOP FLIGHT GLOBE PRODUCTS

globe champ, w/t: **\$495.00**; sidebander dsb-100, w/t: **\$149.95**, kit: **\$119.95**; globe linear la-1, w/t: **\$124.50**, kit: **\$99.50**; vfo-755a, w/t: **\$59.95**, kit: **\$49.95**; vox, w/t: **\$24.95**, kit: **\$19.95**; qt-10, w/t: **\$9.95**; globe matcher sr. at-4, w/t: **\$79.50**, kit: **\$69.50**; globe matcher jr. at-3, w/t: **\$15.95**, kit: **\$11.95**; globe scout 680a, w/t: **\$119.95**, kit: **\$99.95**; power booster pb-1, w/t: **\$21.95**, kit: **\$14.95**.





Says Leo I. Meyerson, W0GFO

Now in stock, these great new Hy-Gain Trap Travellers. May we suggest you read carefully this material and then order directly from World Radio, "the house the hams built".

EASY TO BUY

10% of the purchase price will put this equipment in your possession. Then small monthly payments (we finance our own paper), and it's all paid for before you realize it. Buy now.

LARGE STOCKS

Not only Hy-Gain, but other leading national lines are in stock here at "the world's largest distributor of amateur radio equipment". Drop us a special card about trade-ins.

PERSONALIZED SERVICE

25 hams with the earnest desire to serve you make for the personalized service of World Radio known around the world. We're here to be of service to you in any way we can.

AUTOMATIC LOADING COIL NO. T-3

The Trap Traveller Mobile Automatic Band Loading Coil, Model T-3 may be used with any standard 3-foot base and 5' whip, or with Hy-Gain's telescoping base section and top whip assembly. Air foil design, only 1½" wide by 4¼" high.

Hy-Gain telescoping base section and top whip assembly, Model TBW; fits all standard mobile mounts. 5' top whip, when used with Trap Traveller coil telescopes from 8' 4½" down to 3'. Positive grip, knurled knob connections.

Portable MICRO-DIPOLE KIT



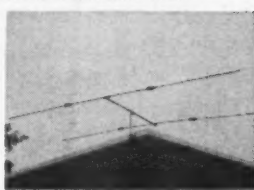
Trap Traveller Dipole Kit requires two 3-band loading coils and makes into midsize high efficiency dipole for 10, 15 & 20M. Mounts anywhere; matches 52 ohm coax; low SWR, all three bands. 16 ft. overall when extended. Sections collapse to 3 ft. for easy carrying. Complete with all hardware (less the two loading coils). Wt.: Only 3½ lbs. Model TDK: \$9.95.

UNIVERSAL MOUNTING BRACKET

Uniquely adjustable screw driven clamp mechanism with 2" mast for mounting the Trap Traveller Dipole or Beam almost anywhere. Adjustable through a 90 degree arc from vertical to horizontal. Wt.: Only 2½ lbs. Model UB: \$9.75.

Portable MICRO-BEAM KIT

Trap Traveller Beam Kit requires four 3-band loading coils and makes into world's first miniature 2-element, 3-band portable beam. 16 ft. overall when extended, boom 6 ft. long. Collapses into 3 ft. package for easy transportation. All elements, boom, aluminum. All hardware included (less the four loading coils). Wt.: Only 9 lbs. TBE: \$19.95



CONVENIENT PLASTIC CARRY BAG

Attractive and convenient plastic carrying bag with full-length zipper holds either Dipole or Beam when collapsed. Plenty of space for Trap Traveller coils and Mounting Bracket in addition. Model TCC: \$9.95.

LEO: PLEASE SEND FREE CATALOG! ENCLOSED IS MY CHECK FOR

☐ T-3 LOADING COIL, ☐ TOP WHIP TBW



- ☐ COMPLETE TRAVELLER
- ☐ MICRO-DIPOLE KIT
- ☐ MICRO-BEAM KIT
- ☐ ACCESSORIES

NAME: _____

ADDRESS: _____

CITY & STATE: _____



Q21-6

WE'RE ON THE MOVE WITH THE

HY-GAIN

Trap Traveller

MOBILE • PORTABLE • DIPOLE • BEAM
for 10, 15 & 20 Meters

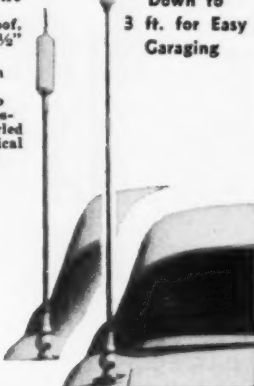
- ★ Automatic 10, 15 and 20 meter operation with ENTIRE WHIP OPERATIVE on all three bands for MAXIMUM EFFICIENCY.
- ★ Unique three band frequency selective circuits select proper amount of inductance for high efficiency CENTER LOADED whip operation on 15 and 20 meters. Loading coil is automatically shorted out for full sized quarter wave whip operation on 10 meters.
- ★ Coil is high Q air wound of No. 14 copper wire on ribbed high impact styrene form. Entire assembly is enclosed in completely weatherproof, air tight plastic cover. Air foil design only 1½" wide and 4¼" high.
- ★ May be used with any standard 3' base section and 5' whip, or Hy-Gain's new telescoping base and whip assembly. Telescopes down to only 3' for easy garaging. base spring necessary. Especially designed high pressure knurled knobs maintain perfect mechanical and electrical contact in telescoping sections when whip is fully extended.
- ★ Designed for 52 ohm Coax, SWR less than 2:1 on all bands.

Extends
to 8 ft.

Telescopes
Down to
3 ft. for Easy
Garaging

\$14⁹⁵

\$15.00



RADIO SHACK EXCLUSIVE!

20% EXTRA CASH

SALE! SAVE \$36.39!

NC-66 reg. \$129.95

RDF-66 reg. 39.95

Eveready 5MR

Flashlight reg. 2.49

Marine

Electronics

Handbook reg. 3.95

retail value 176.34

Sale 139.95

Save 36.39



No. 45DX380 Sh. wt. 25 lbs.



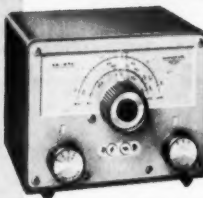
No. 45DX368Y Sh. wt. 35 lbs.



No. 45DX367Y Sh. wt. 35 lbs.




No. 45DX351Y Sh. wt. 35 lbs.



No. 45DX370Y
Sh. wt. 6 lbs.

for your old equipment in trade
on any of these brand new

National 

receivers

**Think of it! 20% OVER-ALLOWANCE
ON TOP OF RADIO SHACK'S
USUAL UNBEATABLE ALLOWANCE!**

SEE HOW RADIO SHACK SAVES YOU 20% MORE!

Usual liberal \$60 allowances now \$72!

Usual liberal \$100 allowances now \$120!

Usual liberal \$200 allowances now \$240!

**Hurry . . . offer ends soon!
Trade by mail today!**

NC-66 3-Way Portable Receiver with RDF-66 Direction Finder

Amateur, marine and shortwave reception!

Ideal for outdoors,
pleasure cruisers, fishing boats!

Rig lets small craft plot position and homing course simply and accurately. The Receiver operates anywhere, uses AC, DC or batteries. Has ferrite loop and whip antennas, 2-stage amplifier, CW oscillator, speaker, phone jack, 5-band dial, metal cabinet with handle. RDF-66 mounts on or near NC-66.

~~\$176.95~~ Sale **\$139.95**

Without trade: \$14 Down, \$11 Monthly

NC-109

No other general coverage receiver
priced so low!

Exclusive Microtone crystal filter!

Has separate product detector for CW and SSB, big "S" meter, 4-band coverage (540 kc to 40 mc), phone, CW or SSB, slide-rule dial, 11 tubes, metal and chrome cabinet. 16 1/4" x 10" x 10 1/2"

Net **\$199.95**

Without trade: \$20 Down, \$13 Monthly

NC-188 Receiver

Low-budget, high quality special!

4 general coverage, 5-band amateur ranges!

Covers 540 kc to 40 mc; phone or CW. Separate tuning capacitors, knobs and scales for general coverage and bandspread. Slide-rule dial, "S" meter, gray metal and chrome cabinet. 16 1/4" x 10" x 10 1/2"

Net **\$159.95**

Without trade: \$16 Down, \$12 Monthly

NC-300 Receiver

Tops in sensitivity!
Greater stability!

10 dial scales covering 160 to 1 1/4 meters convertible to special 30-35 mc tunable IF. Slide-rule dial, easily readable to 2 kc, 3-position IF selector.

~~\$309~~ Net **\$329**

Without trade: \$33 Down, \$19 Monthly

VFO-62

For 6 and 2 M Bands; Full Coverage!
All-New! Versatile! Self-Powered!

Front panel crystal socket allows instant selection of crystal without changing transmitter connections. Plugs into 117 VAC outlet; draws no power from your rig. Rugged gray plastic cabinet. 5 1/2" x 6 1/2" x 5 1/4"

Net **\$69.95**

Without trade: \$7 Down, \$7 Monthly

FREE! 24 Pg Bargain Circular: Save!
Save! Latest circular shows detailed photos and descriptions printed in beautiful rotogravure on fine glossy paper of hundreds of exclusive **HAM** — **HI-FI** — **RECORD** — **TAPE** — and **TOOL** buys.
Send for yours today.

RADIO SHACK

CORPORATION Dept. 6D,
730 Commonwealth Ave., Boston 17, Mass.

Please quote allowance on my present equipment

Model _____

I would like to trade for the following National

Model _____

☐ Please send FREE Bargain Circular.

Name _____

Address _____

City _____ Zone _____ State _____

FILL IN AND MAIL TODAY!

EASY-PAY-PLAN

WITH TRADE: Use your present equipment as down payment.

If the price of the equipment you want is **\$200.00**

And the trade-in allowance on your present equipment is **96.00**

The balance would be **104.00**

And payments only \$10 monthly

WITHOUT TRADE:

If new equipment price is \$200 down payment is \$20
and monthly payment is \$13



National NC

Symbol of reliability and performance for
more than 40 years. . . .

NATIONAL radio equipment is standard on
8 out of 10 U.S. Navy vessels, conclusive
proof of outstanding quality and depend-
ability!

TRADE AND SAVE BY MAIL AT RADIO SHACK!

Our 3 great stores and huge mail order plant are as close
as your front door. The most modern electronic mailing
system in the world sends your order on its way the same
day it is received.

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IS K6INI THE WORLD'S CHAMPION DX OPERATOR?

Judge for yourself! Read his letter and count the DX he has worked—with only 65 watts and a \$16.95 Gotham V-80 Vertical Antenna.

2405 Bowditch, Berkeley 4, California
January 31, 1959

GOTHAM
1805 Purdy Avenue
Miami Beach 39, Florida
Gentlemen:

I just thought I would drop you a line and let you know how pleased I am with your V-80 vertical antenna. I have been using it for almost two years now, and am positively amazed at its performance with my QRP 65 watts input! Let me show you what I mean:

I have worked over 100 countries and have received very fine reports from many DX stations, including 599 reports from every continent except Europe (589)! I have also worked enough stations for my WAC, WAS, WAJAD and ADXC awards, and I am in the process of working for several other awards. And all this with your GOTHAM V-80 vertical antenna!

Frankly, I fail to see how anyone could ask for better performance with such low power, limited space and a limited budget. In my opinion, the V-80 beats them all in its class.

I am enclosing a list of DX countries I have worked to give you an idea of what I have been talking about.

Wishing you the best for 1959, I am

Sincerely yours,
Thomas G. Gabbert, K6INI (Ex-T12TG)

List of 105 countries/stations worked with 65 watts and a V-80 vertical

BV1US	KG4AI	VK3YL
CE3DZ	KG6FAE	VK9XX
ZL5AA	KH6J	VK9AT
CO2WD	KL7BUZ	VK8CJ
CN2BK	KM6AX	VP2KFA
CN8TB	KP4ACF	VP2AY
CR9AH	KP6AL	VP2DW
CT1CB	KR6BF	VP2MX
CX2FD	KS4AZ	VP2LU
DL1FF	KV4AA	VP2SW
DU7SV	KW6CA	VP5CP
EA1FD	KX6AF	VP5BH
ET4N	KZ5CS	VP6TR
F8VQ	LA3SG	VP7NM
F88ZZ	LU2DFC	LU1ZS
FG7XE	LZ1KSP	VP9BK
FK8AL	OA4AU	VR2DA
FM7WT	OE9EJ	VR3B
FO8AD	OH2TM	VS1HC
G3DOG	OK1FF	VS2DW
GC8DO	ON4AY	VS6LN
GI3WJ	OG1AX	XE1PJ
GM3GJ	OZ2KK	XW8AI
GW3LJN	PA8FAB	YN1JW
HA5KBP	PJ5AA	YU3FS
HC4IM	PJ2ME	YV5HL
HC8LUX	PY2EW	ZC5AL
HE9LAC	PY8NE	ZE1JV
HP1LO	SM5AGB	ZK1BS
IT1MV	SP6BY	KH6MG/ZK1
JA1ANG	TI2LA	ZK2AD
JZ8HA	UA1AU	ZL1ABZ
W1AW	UA9KKB	ZL3JA
K86BJ	UQ2AB	ZM6AS
KC4AF	VE8OJ	ZT5OU

SOME QUESTIONS AND ANSWERS

Why are all Gotham beams of the Yagi type, all metal, and grounded at the center? Answer: To get the maximum strength for the minimum weight, to get maximum efficiency, and to avoid the use of wood, tuning stubs, traps, or other substitute devices, all of which are undesirable and unnecessary. In addition, grounded beams are lightning-proof and protect your home.

How do Gotham beams gain compare with higher priced antennas? Answer: No beam, regardless of price, can give more gain, for a given boom size, than a Gotham beam. Obviously, the more elements, the more gain. Our gain figures are published in our literature, and are available, free, on request.

Why is the Gotham price so very low? Doesn't the low price mean a lack of quality? Answer: The Gotham price is low because we sell in quantities and make only a fair profit on each antenna. We do not add on a tremendous overhead and engineering charge. As for quality, we have always used the best materials, and every antenna is doubly inspected before shipment. Thousands of Gotham antennas are in use the world over.

What is the difference between the Standard and the Deluxe beams? Answer: The Standard beams in the 6, 10, and 15 meter bands use $\frac{3}{8}$ " and $\frac{1}{2}$ " tubing elements; the Deluxe models for these bands use $\frac{1}{4}$ " and 1" tubing. In the 20 meter beam, the Standard beams have a single boom, while the Deluxe beams use twin booms. All 20 meter beams use full 12 foot booms. In the 20 meter beams and in the Twobanders and Tribanders, only $\frac{3}{8}$ " and 1" tubing are used.

Is it advantageous to use a Gotham Twobander or Tribander beam? Answer: Hundreds of these beams are in daily use. They are compromise beams, but by having each element a full half-wave, their gain figures are more than reasonably good. Of course a single three element beam on a single band will outperform a Tribander on that band, but the Tribander permits beam operation on three bands.

Do the Gotham verticals perform well on all bands? Answer: Yes, thousands of ham users attest to their efficiency on all bands from 6 to 160 meters. Reports of tremendous DX on low power are common.

Are mounts supplied with the vertical antenna? Answer: Yes, four mounting straps for side mounting are furnished with each vertical.

Are radials needed with a Gotham vertical? Answer: No, except a few rare locations. 99% of the installations are done without radials.

How much power can be used with a Gotham vertical? Answer: Anything up to the legal limit.

Is much space required for installing a vertical? Answer: No, only a few square inches are needed.

Can you give details on the loading coil used in the Gotham verticals? Answer: Yes, it is made for us by Barker and Williamson. It is 3" in diameter and exceptionally rugged. No other loading coil in the antenna industry has a higher Q.

Do you need a separate loading coil for each band? Answer: No, a V160 loading coil will cover 160, 80, 40, 20, 15, 10 and 6; a V80 loading coil will cover 80, 40, 20, 15, 10, and 6; a V40 loading coil will cover 40, 20, 15, 10, and 6 meters.

What antennas are best for a novice? Answer: The V80 vertical and the S153N beam are the most popular choices.

Why should a ham buy a Gotham antenna? Answer: The tremendous progress of the amateur radio art makes it imperative that hams graduate from the antiquated antennas of years past to a modern antenna system. We will be glad to send, free of charge, our technical literature on our 50 antennas, or you can order for immediate shipment.

73,
GOTHAM

FREE literature? YES
FREE specifications? YES
FREE beam gain calculator? YES
OR ALL THREE AND IMMEDIATE SHIPMENT
IF YOU ORDER FROM THIS LIST OF 50 ANTENNAS

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1805 PURDY AVE., MIAMI BEACH, FLA.

Enclosed find check or money-order for:

TWO BANDER BEAMS

A full half-wave element is used on each band. No coils, traps, baluns, or stubs are used. No calculations or machining required. Everything comes ready for easy assembly and use. *Proven Gotham Value!*

6-10 TWO BANDER.....	<input type="checkbox"/>	\$29.95
10-15 TWO BANDER.....	<input type="checkbox"/>	34.95
10-20 TWO BANDER.....	<input type="checkbox"/>	36.95
15-20 TWO BANDER.....	<input type="checkbox"/>	38.95

TRIBANDER

Do not confuse these full-size Tribander beams with so-called midgits. The Tribander has individually fed (52 or 72 ohm coax) elements and is not frequency sensitive, nor does it have baluns, coils, traps, or other devices intended to take the place of aluminum tubing. The way to work multi-band and get gain is to use a Gotham Tribander Beam.

<input type="checkbox"/> 6-10-15	\$39.95	<input type="checkbox"/> 10-15-20	\$49.95
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2 METER BEAMS

Gotham makes only two different two meter beams, a six-element job and a twelve-element job. They are both Yagi beams, with all the elements in line on a twelve foot boom.

<input type="checkbox"/> Deluxe 6-Element	9.95	<input type="checkbox"/> 12-El	16.95
---	------	--------------------------------	-------

6 METER BEAMS

New records are being made every day with Gotham six-meter beams. Give your rig a chance to show what it can do, with a Gotham six-meter beam.

<input type="checkbox"/> Std. 3-El Gamma match	12.95	<input type="checkbox"/> T match	14.95
<input type="checkbox"/> Deluxe 3-El Gamma match	21.95	<input type="checkbox"/> T match	24.95
<input type="checkbox"/> Std. 4-El Gamma match	16.95	<input type="checkbox"/> T match	19.95
<input type="checkbox"/> Deluxe 4-El Gamma match	25.95	<input type="checkbox"/> T match	28.95

10 METER BEAMS

Ten meter addicts claim that ten meters can't be beaten for all-around performance. Plenty of DX and skip contacts when the band is open, and 30-50 miles consistent ground wave when the band is shut down. Thousands of Gotham ten meter beams have been perking for years, working wonders for their owners, and attesting to the superior design and value of a Gotham beam.

<input type="checkbox"/> Std. 2-El Gamma match	11.95	<input type="checkbox"/> T match	14.95
<input type="checkbox"/> Deluxe 2-El Gamma match	18.95	<input type="checkbox"/> T match	21.95
<input type="checkbox"/> Std. 3-El Gamma match	16.95	<input type="checkbox"/> T match	18.95
<input type="checkbox"/> Deluxe 3-El Gamma match	22.95	<input type="checkbox"/> T match	25.95
<input type="checkbox"/> Std. 4-El Gamma match	21.95	<input type="checkbox"/> T match	24.95
<input type="checkbox"/> Deluxe 4-El Gamma match	27.95	<input type="checkbox"/> T match	30.95

New! Ruggedized Hi-Gain 6, 10, 15 METER BEAMS

Each has a TWIN boom, extra heavy beam mount castings, extra hardware and everything needed. Guaranteed high gain, simple installation and all-weather resistant. For 52, 72 or 300 ohm transmission line. Specify which transmission line you will use.

<input type="checkbox"/> Beam #R6 (6 Meters, 4-El)...	\$38.95
<input type="checkbox"/> Beam #R10 (10 Meters, 4-El)...	40.95
<input type="checkbox"/> Beam #R15 (15 Meters, 3-El)...	49.95



15 METER BEAMS

Fifteen meters is the "sleeper" band. Don't be surprised if you put out a quick, quiet CQ and get a contact half-way around the world. Working the world with low power is a common occurrence on fifteen meters when you have a Gotham beam.

15 METER BEAMS

<input type="checkbox"/> Std. 2-El Gamma match	19.95	<input type="checkbox"/> T match	22.95
<input type="checkbox"/> Deluxe 2-El Gamma match	29.95	<input type="checkbox"/> T match	32.95
<input type="checkbox"/> Std. 3-El Gamma match	26.95	<input type="checkbox"/> T match	29.95
<input type="checkbox"/> Deluxe 3-El Gamma match	36.95	<input type="checkbox"/> T match	39.95

20 METER BEAMS

A beam is a necessity on twenty meters, to battle the QRM and to give your signal the added punch it needs to over-ride the high power boys. Hundreds and hundreds of twenty meter beams, working year after year, prove that there is no better value than a Gotham twenty meter beam.

<input type="checkbox"/> Std. 2-El Gamma match	21.95	<input type="checkbox"/> T match	24.95
<input type="checkbox"/> Deluxe 2-El Gamma match	31.95	<input type="checkbox"/> T match	34.95
<input type="checkbox"/> Std. 3-El Gamma match	34.95	<input type="checkbox"/> T match	37.95
<input type="checkbox"/> Deluxe 3-El Gamma match	46.95	<input type="checkbox"/> T match	49.95

(Note: Gamma-match beams use 52 or 72 ohm coax. T-match beams use 300 ohm line.)

ALL-BAND VERTICAL ANTENNAS

You could work the whole world, and get fantastic reports, with a Gotham vertical and only 55 watts, like VP1SD.

You could work tremendous skip and DX, and be surprised at the way your Gotham vertical brings them in, as R. E. C. of Washington, D. C., found out.

You could have a simple, easy-to-install-and-operate vertical antenna, and switch from band to band, as thousands of Gotham customers have done.

<input type="checkbox"/> V40 vertical for 40, 20, 15, 10, 6 meters.	\$14.95
<input type="checkbox"/> V80 vertical for 80, 75, 40, 20, 15, 10, 6 meters.....	\$16.95
<input type="checkbox"/> V160 vertical for 160, 80, 75, 40, 20, 15, 10, 6 meters.....	\$18.95

HOW TO ORDER. Send check or money order directly to Gotham. Immediate shipment by Railway Express, charges collect. Foreign orders accepted.

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Station Activities

(Continued from page 98)

bers: K2JSF, K2HWF, K2BUK and K2PLU. Two honorary members are K2HUK and W2LXE. K2QJJ was appointed Radio Chief of Kenmare and Tonawanda, Erie County Civil Defense. The RAWNY's board of directors elected K2UVN, pres.; W2SSC, vice-pres.; K2GBY, treas.; and K2KQC, secy. K2VAW is sporting the Collins "S" line and new TA-33 beam. K2MXA has been concentrating on Aurora for 2 meters. He also is on 220 Mc. K2HVV has a new three-element 15-meter beam. W2DEW is on the air with an SX-101 and a DX-100. W2BBB has the "S" line. W2UVE now has 213 countries confirmed. K2QPC passed the General Class exam. K2CUQ has a Grandmother's certificate. K2DBB has a Seneca transmitter on 6 meters. K2MES joined the Air Force and is in Texas. K2ECK is back home after his tour with Uncle Sam. K2ICK and K2MHC are now s.s.b. K2DPA attends Houghton College and operates K2QGG. W2PVI is rebuilding the shack. The Syracuse V.H.F. Club elected K2PKL, pres.; W2IYR, vice-pres.; W2OGY, secy.-treas.; and K2EPG, act. mgr. W2EMW reports working SM5WN/LA/P for No. 236. W2COB copped the high phone score in W.N.Y. in the Jan C.D. Party. He claims there's no competition. Any challengers? W2TPV, 16 years old, received his 35-w.p.m. sticker. W2BPU is working DX on 15 meters with a DX-20 and an SX-99. W2BPF is going s.s.b. K2MUG is going mobile. K2ZM has transmitter troubles. K2UJZ received Gay-Lark Certificate No. 73 (1). W2RQF now is s.s.b. on 80, 40 and 20 meters. K2TQC now is at 127 countries. K2RIT was named to the RARA executive committee. The Smithsonian Institute has called on the AWA for advice on exhibiting ancient gear. The curator came to Rochester to talk to experts W2QY, W2ICE and W2GB. Traffic: K2SIL 982, W2RUF 565, K2MES 327, W2EZB 264, K2RTN 232, K2SSX 221, W2TPV 168, K2QDT 132, K2JBX 130, K2UJZ 117, K2AQO 110, K2KQC 86, K2YVP 78, W2PGA 72, W2RUT 67, K2RWV 41, W2MTA 40, W2ZRC 39, K2DPA 37, K2GQU 35, W2ABL 30, K2OFV 28, W2RQF 26, K2TDV 22, W2FEB 21, W2BLO 12, K2YYP 10, W2GXE 5, K2EQB 4, K2RIT 4, K2TQC 4, K2JSF 2, K2DXV 1.

WESTERN PENNSYLVANIA—SCM, Anthony J. Mroczka, W3UHN—SEC, OMA, RMs: GEG, NUG and LXU, PAMs: AER. It is with great sadness that we report the death of AAX, Frank was one of the founders of the Amateur Transmitters Assn. of W. Pa., the first amateur radio organization in the Pittsburgh district. He also was the "Loose Coupler" of the Pittsburgh Area Branch of the Quarter Century Wireless Assn. Our deepest sympathy to QPJ, his XYL. The WPA Traffic Net meets Mon. through Fri. at 1900 EST on 3585 kc. The Penna. Fone Net (PFN) meets Mon. through Fri. at 1800 EST on 3850 kc. We regret to announce the resignation of TOC as Phone Activities Manager. Thanks, Bill, for all your fine efforts and help this past year. K3DPD, now General Class, is on 75-meter phone. QYB is on s.s.b. The Butler County Party Line meets each Wed. at 2100 on 29.6 Mc. New officers of the South Hills Brass Pounders and Modulators are QN1, pres.; TPU, vice-pres.; K3HHX, treas.; Jack Hall, secy.; LFG, WFR and GJS, directors; OMP, BL and LTH, trustees. K3HLK is the son of TPU. The Copella family, K3DDH and son K3CMC in Elk County, claim that Sylvia, K3IAO, is the first YL in the county? Any takers? New officers of the Conemaugh Valley ARC are LSE, pres.; PHH, vice-pres.; KUQ, secy.; WRC, treas.; WYI, MIM and PAE, trustees. ZWZ made WAC on 10 meters. K3ABN has a home-brew electronic keyer in operation. K3HWT, on 15 meters from the Butler Area with an Eico rig, wishes a sked with a station in New Kensington, CA has a new Thunderbolt and a 73A-4. JWZ attended the New England V.H.F. Society Banquet. DTZ, General Class now, is building 420-Mc. gear. The Steel City ARC reports via Kilo Watt Harmonics that KHS is in Florida; K3EKL has a Communicator on 6 meters; TOB is working in Oswego, N. Y.; SDV is a saxophone player. Up Erie way: The RAE winter banquet was a huge success; NRU is working K3IDT on Ice Island in the Arctic. The Etma RC reports via the Oscillator that new Novices are K3HZZL and K3HPE; ZFB has won the club's first Statewide Achievement Award certificate. AOH now is an A-1 Operator. The Horseshoe RC reports via Hamateur News that new officers are MBB, pres.; ROA, vice-pres.; K3DEJ, secy.-treas.; KQD, act. mgr.; the beams of TXQ and ROA were damaged during a recent storm; EGV passed his 2nd-class phone exam; a new Novice is K3H8Q; YHQ has a new HRO-60; LIV is doing swell job as net control on the c.d. net; K3DEJ has received his WTPA certificate. Traffic: W3KUN 300,

(Continued on page 118)

When Gonset, long the foremost
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G-33 has the same basic
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incorporates certain design
simplification which permits
exceptionally reasonable
pricing with little sacrifice
in performance.

Available in gray or white cabinets

G43 Features high stability and great ease of tuning by use of a 6-band tuner covering the following ranges: .54-1.6 mc, 1.8-5.7 mc, 5.7-13 mcs, 13-20 mcs, 20-25 mcs, 25-30 mcs . . . Employs drum dial for quick identification of band in use . . . bandsread dial provides calibration of an amateur band on each range, as well as a logging scale . . . calibrations on band 6 provide for use of VHF converters . . . has 6 double-tuned Hi-Q transformers at 1650 kc in I-F section . . . selectivity: 6 kc at 6 db down, 24 kc at 60 db.

Panel controls include: Main tuning, Bandsread tuning, Bandswitch, Audio volume, Sensitivity, Antenna trimmer, ANL on-off, xtal calibr. on-off, Phone-CW, Standby-Receive . . . signal strength meter . . . provision for internal crystal calibrator accessory, available as optional equipment . . . muting connections. Tube complement: 6BE6 (conv), 6BA6 (1st I-F), 6BA6 (2nd I-F), 6AU6 (3rd I-F), 6AL5 (det, AVC, ANL), 12AX7 (1st Audio-BFO), 6CM6 (2nd audio), 6X4 (rect).

G33 Tunes to the following ranges: Band 1, .54-1.6 mc; Band 2, 1.8-6 mcs; Band 3, 6-13 mcs; Band 4, 13-34 mcs . . . bandsread dial provides logging scale and calibrated scales for amateur bands. 1650 kc I-F system results in greatly improved image rejection . . . 3 double-tuned Hi-Q transformers provide excellent selectivity.

Panel controls include: Main tuning, Bandsread tuning, Bandswitch, Audio volume, Antenna trimmer, Sensitivity, and Function selector . . . Tube complement: 6BE6 (conv), 6BA6 (1st I-F), 6BA6 (2nd I-F, BFO), 6AV6 (det, AVC, 1st audio) 6CM6 (2nd audio), 6X4 (rect.)

External speaker is available as an optional accessory. 6" by 9" speaker is contained in an attractive cabinet designed to match receiver, and blend with surroundings. Has headphone jack and tone control.



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Now you can work 6 meters — or work 10 meters — with a Gonset Communicator that is a complete station in one package: transmitter, receiver, power supply. Just connect antenna, microphone, and 115-volt AC source, and you're on your way to the thrills of working a new band. Transmitter circuits of both the 6-meter and the 10-meter models have pi-network output and type 6146 tubes. Multiplier stages are ganged and tracked with highly stable calibrated VFO or optional crystal. The sensitive, selective communications-type receiver section features adjustable "squelch," panel-mounted loudspeaker, "S" meter, and planetary vernier drive for easy tuning. Yes, the best way to get on 6 or 10 meters is with this precision equipment, packaged in Gonset's exclusive money-saving way. See it at your dealer's now.

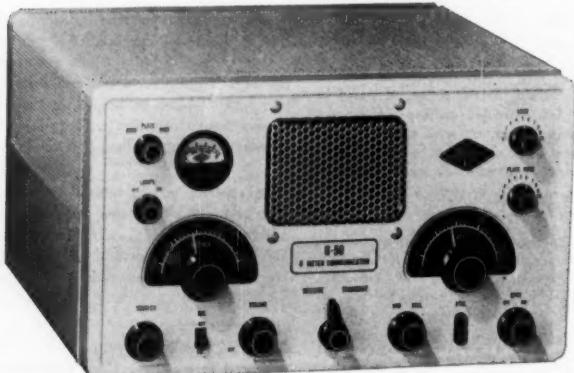


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Specifications — 6-Meter Communicator: *Freq. Coverage*, 50-54 Mc; *Xmtr Input*, 40-50 watts; *Final Amp.* uses 6146 tube with pi-network output; VFO is highly stable and has spotting switch to aid tuning; *Adjustable Squelch*; "S" Meter; *Panel-Mounted Speaker*; *Built-In Heavy-Duty 115V AC Power Supply*.
Size: 7½" high, 12½" deep, 13" wide.

10-Meter Communicator: *Freq. Coverage*, 28-29.7 Mc; *Xmtr Input*, 50 watts; *Final Amp.* uses 6146 tube with pi-network output; VFO is highly stable and has spotting switch to aid tuning; *Panel Meter* is switchable to read amplifier grid or plate currents or modulator plate current; *Adjustable Squelch*; "S" Meter; *Panel-Mounted Speaker*; *Built-In Heavy-Duty 115V AC Power Supply*. • Size: 7½" high, 12½" deep, 13" wide.

6-Meter Communicator . . . \$319.50 Amateur Net
10-Meter Communicator . . . \$299.50 Amateur Net



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FULL CRYSTAL CONTROL... STABLE! NO TUNING!

G-11 offers highest stability... crystal tolerance .005% (F.C.C. requirement) both transmitter and receiver. No tuning — no drifting off channel. Adjustable squelch for muted standby operation. Full press-to-talk operation controlled by button on hand-held microphone.

POWER INPUT: Transmitter rated at 5 watts input, (maximum for Class "D" service) AM modulated.

OPERATING POWER: Three models available: 6 volts DC, 12 volts DC, and 115 volts AC. Power supplies are built in.

COMPACT: 6 $\frac{3}{4}$ " wide, 5 $\frac{1}{4}$ " high, 6 $\frac{3}{4}$ " deep.

G-11 CITIZENS COMMUNICATOR. Complete with press-to-talk microphone and transmitter/receiver crystals for one channel. Less antenna. 115 volts AC operation.

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Same as above except 12 volts DC.....

..... Model 3304 124.50

..... Model 3305 124.50

Same as above except 6 volts DC.....

GROUND PLANE ANTENNA FOR BASE OPERATION Model 3296 39.95

Includes 50' transmission line, guy wires, screw eyes etc., read for installation.

BEAM ANTENNA FOR POINT-TO-POINT OPERATION Model 3302 39.95

3-element beam, forward gain 8 db. Front to back ratio 20 db.

MOBILE ANTENNAS... several suitable types are available at your jobbers.



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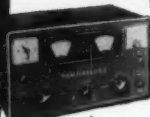
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CENTRAL DIVISION

ILLINOIS—SCM, Edmond A. Metzger, WPRN—Asst. SCM: Grace V. Ryden, 9GME, SEC: HOA, RM: PCQ, PAM: RYU, EC Cook County: HPG, Section net: ILN, 3515 kc. Mon. through Sat. at 1900 CST. #CPI, who is well known as handler of a great amount of traffic for the gang in this section, is moving to Texas. The Central Illinois Radio Club code class (Bloomington) graduated 13 Novices. New calls soon will be heard from this locality. K9GCN is now on 420 Mc. K9DTB is doing FB on the higher frequencies, especially on 6 meters. K9GUA is sporting new 10- and 15-meter quads. The SKEDS Amateur Radio Club is transmitting code practice daily on 29.1 Mc. at 1700 CST. A new Chicago Area call heard is KN9RAQ. K9JTV has completed his Apache and is waiting for the hard ones to come in. GFF has made his DUE-4, WAA and WAG awards. NN is enjoying his new Johnson Thunderbolt final. New officers of the St. Clair Amateur Radio Club (East St. Louis) are KFX, WUP, K9IBY, K9BTR, MQU and K9BGL. UCZ is bringing in some fine DX on 10 and 15 meters. IDA reports that the S.S.B. Net handled 1222 messages in 22 days of operation and had 483 stations check in. The W9 QSL Bureau asks that all W/K 9s not having envelopes on file please send them to DSO. Many of the gang were very active in the recent high-water emergencies in the Rockford Area with both mobile and fixed stations. DRN took advantage of the Aurora opening on Mar. 26 and worked good DX. EU has worked 227 countries. K9CYZ finally is on RTTY with his Model 26. Fifteen new Novices are now on the air in the Kankakee Area as a result of the code class sponsored by the KAIRS. Officers of the Starved Rock Radio Club announced that the club's banquet will be held at the same place this year and the date will be June 7. Officers of the West Suburban YMCA Amateur Radio Council (LaGrange) are K9IYV, K9OEF and K9LAE. KCX is now s.s.b. and handling it like an old pro. KQL is working the nets with a new Apache and it is only a matter of time before he will be s.s.b. K9OZM reports that new calls heard by him are KN9RDS, KN9RAQ and KN9RAT and that his new RME-4350A receiver brought them in. K9CIL has finished erection of his 70-ft. tower sporting a 10-meter beam. K9KYP and K9ICN are using Gonset Communicator IIIs and four-element beams. VER and KLTRE recently were married and are off to a new home in W7-Land. The March issue of *Ham Gab* (Hamfesters, Chicago) had a full-page spread biography of HPG, Vice-Director of the Central Division. K9LTL has a new Viking Challenger and tri-band beam. WUP's new beam is a Hornet. SARA's (southern Illinois) membership is increasing rapidly and the club's weather net is operating very successfully. CSW and the North Central Phone Net handled 832 messages. RYU reports that the Quad City Amateur Club Hamfest will be held May 24. K9BIV is hunting v.h.f. with a new Heathkit Seneca. Traffic: (Mar.) W9DO 818, KN9OUU 371, W9IDA 324, USR 226, MAK 139, K9MHW 133, JSV 107, W9FAW 86, SXL 56, K9ISP 46, W9EU 35, K9GDQ 28, BTE 20, ERH 19, IXX 19, CHL 14, BIV 8, W9TZN 8, GFF 7, K9CYZ 5, W9NN 4, SKR 4, K9DUA 2, W9HKA 2, K9BLY 1, W9VCQ 1. (Feb.) K9GDQ 21, KIL 20.

INDIANA—SCM, Arthur G. Evans, W9TQC—Asst. SCM: Seth Lew Baker, 9NTA, SEC: SNQ, PAMs: BDG, BRJ and UXK, RM: DGA, TT and VAY. Net skeds: IFN (a.m.) 0800 daily and 1800 M-F on 3910 kc; ISN (s.s.b.) 1330 daily on 3920 kc; QIN 1900 daily and RFN 0700 Sun. on 3636 kc. Three new ECs are DGA for Vanderburg Co., K9IWW for Tipton Co. and JBQ for Clark Co. Other appointments were K9HMC and K9JKK as OPSs and W9YSX as OO. After doing a very fine job of organizing the sideband net, KOY has been forced to resign as PAM because of his work schedule. The new PAM is MEK, who helped KOY organize the net and has been active as NCS. A slow-speed section of QIN was started Apr. 27 and meets at 1800 CDST on 3745 kc. Mon., Wed. and Fri. We are asking that crystals no longer needed by ex-Novices be contributed so that they might be ground to 3745 kc. to help out some of the newcomers. This net will not be limited to Novices. All are welcome to join in and help handle the traffic. The spring IRCC meeting was held in Indianapolis Apr. 3. New clubs voted in were the Gibson County ARC, Randolph County ARA, Vanderburg ARES and Winslow ARS. Two new awards will be given by the IRCC for Field Day operation this year. The highest scoring station on 2 and on 6 meters in Indiana that submits a log to IRCC will receive awards. This is open to both clubs and individuals. Points should be scored according to ARRL rules. Clubs also should submit the log of their highest scoring transmitter on

(Continued on page 150)



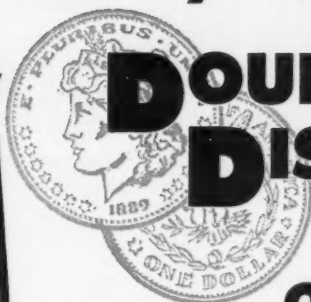
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any hand for competition for the IRCC FID plaque. New officers of the Purdue ARC are #GCCI, pres.; K9HJK, vice-pres.; and K9DOR, secy.-treas. MQQ is building a kw. with a 304TL in the final. K9JJC built a Knight V.F.O. and is active on 40 meters. K9BEH reports activity picking up on 6 meters in the Bedford Area. Net traffic this month: IFN 439, RPL 343, ISN 110, RFN 110 and IMO 58. Those making BPL were ETM, NZZ, TT and ZYK. Traffic: (Mar.) W9NZZ 374, ZYK 516, TT 304, JOZ 358, VAY 296, K9AYI 227, W9ETM 221, BDG 135, TQC 109, EHJ 102, SNQ 79, RTH 72, DGA 62, MEK 53, EJW 51, NTL 50, PMT 50, EGV 44, K9HMC 41, W9GJS 40, VNV 38, IMU 32, K9IXD 27, JKK 24, GBB 23, W9ZPP 23, SWD 22, DZC 18, YXK 18, K9PTS 17, W9CC 15, DOK 15, HUF 14, K9HIG 14, BSU 11, GPG 11, W9STC 11, ENU 10, K9KBW 10, W9QR 10, UQP 7, URQ 7, BDP 6, K9DWK 6, W9NTR 6, UXK 4, VQP 4, MGQ 3, K9GGSV 2. (Feb.) W9GUX 2.

WISCONSIN—SCM, George Wolda, W9QKB—SEC: YQH. PAM: NRP. V.H.F. PAMs: GFL and K9IQO. RM's: SAA, K9AEQ and K9ELT. RKP is now an OO. WIN certificates went to K9DCN and K9GYQ; WTN certificates to DQS, DUQ, VCN, K9QBH and K9QIL. RKK received his 35-w.p.m. code sticker and 200-country DXCC sticker. Son K9NPQT received his 10-w.p.m. sticker. KON is handling traffic for KGI and KC4 on schedule on 20-meter s.s.b. BPL certificates went to DYQ and KON. New calls in Spooner are KN8s RCI, REC, RED and RJA. YZG now is a DXCC member. K9GSC worked his first 18 countries during two week ends. Plan now to attend the combined Ground Hog Party and Wisconsin Section Fall Festival at Watertown Oct. 11. Meetings will be held for all phases of operating. The BEN Picnic date is July 12. Watch for more information on the above two activities. LJU and K9ENB are new DXCC members. The MRAC now has 21 of its members in the DXCC. 140 signal discrepancy notices were sent out by 7 Wisconsin OOs during March. K9ACQ now has WAS. K9NPZP, of Racine, has a new Ranger on 80 and 15 meters. The Milwaukee club held its annual "Traffic Nite" with DYQ as master of ceremonies and with GPI, Central Division Director, WDDO, mgr. of the Central Area Traffic Net, and KQB and K9DTK as guest-speakers. High activity by the Milwaukee Emergency Corps is reported by RUF. EC and Radio Officer for Milwaukee County. The Madison Club furnished communications for the annual fishing percherie on Lake Mendota with fixed and mobile stations on 10 meters. UGT and ZZW acted as co-chairmen for the event. SIZ is working DX on 10 meters with 24 watts and an attic antenna. PJT and K9JWU have new beams. Here's wishing all of you a happy vacation. Traffic: (Mar.) W9YDQ 541, K9DAC 486, W9KON 214, SAA 210, K9GYQ 184, DTK 136, ELT 85, W9KQB 65, K9IQO 35, W9IKY 47, K9AEQ 35, W9CBE 30, VHP 30, COO 26, K9GSC 21, DOL 18, W9SIZ 17, VIK 16, K9ALP 15, W9WJH 15, K9LUM 12, ESN 11, PDJ 8, W9YDQ 8, K9CEP 7, W9PJT 5, K9LXF 4, GDF 3, W9RQM 2. (Feb.) K9AEQ 26, W9KKK 10, K9GSC 7, W9RKP 6.

DAKOTA DIVISION

NORTH DAKOTA—SCM, Harold Wengel, W0HVA. SEC: K9JLW. K8CNC reports that after the winter winds his Hy-Gain 12AV vertical antenna leans to the south. While waiting for a Heath Comanche to be delivered, K9OLM used a DX-20, home-brew modulator and Novice Q-5er with a folded dipole antenna to check into the No. Dak. 75-Meter Net. A new ham in the Jamestown Area is KN8SZG, Irvin Buck, of Streeter, N. D. He has joined the Jamestown Amateur Radio Club. A1U is using an HT-32 and a kw. amplifier featuring a 4CX1000A. He recently erected a Gonset Tri-band beam. It is 50 feet above the hill on which he lives. K9JLW has sold all his station equipment, but we hope to see him back on the air soon. Traffic: (Mar.) K8CNC 33, ITP 31, ATK 29, GGI 19, JLU 10, KJR 6, GRM 5, RLF 5, IQJ 4, W0BHF 2, K0IAB 2, AJW 1, LBD 1, MPH 1, PHC 1, PLY 1.

SOUTH DAKOTA—SCM, Les Price, W0FLP—Asst. SCM: Gerald F. Lee, YKY. SCM assistants: FKE and NEO. SECs: YQB and GDE. PAM: SCT. RM: K9BMQ. The S.D. 75-Meter Phone Net, which meets on 3870 kc. daily at 6:30 p.m. CST and 9:30 a.m. Sun., reports 36 sessions; K9BQR 5, GWA 5, CTZ 3, EXX 1, K0DUR 4, K9BMQ 4, YVF 1, SCT 13, QNI 889, high 41, low 11, average 24.7; QTC 72, high 10, low 0, average 2.03; informals 94, high 6, low 0, average 2.61. The S.D. 40-Meter Net, which meets Mon. through Fri. on 7235 kc. at 12:15 p.m. CST, reports 24 sessions; K9LKH 17, K9BMQ 5, SCT 2; QNI 321, high 29, low 19, average 21.7; QTC 87, high 14, low 0, average 3.025; informals 61, high 6, low 0, average 2.5. The S.D. C.W. Net, which meets Mon., Wed. and Fri. on 3645 kc. at 7 p.m. CST, reports 13 sessions; K9BMQ 6, K0DYR 5,

SCT 2; QNI 81, high 8, low 3, average 6.33; QTC 12, high 3, low 0; informals 1. The Sioux Falls Novice Net (training and traffic) now operates on 3717 kc. Tue. and Thurs. at 7 p.m. CST. K0LXF sold his SX-99 receiver, then bought and built a Heathkit Comanche. EUJ has been doing some 10-meter work and is starting to check back into the 75-Meter Net. FFP has returned to the 40-Meter Net. SDP attended a cousin's wedding in Omaha. YVF, Lyle, and K0DHA, Lois, were off the net with transmitter trouble. K9ASQ helped fill the gap on nets for this Redfield couple. K9LKH is busy collecting QSLs. CAS is back on the 75-Meter Net. The evening net was saddened to hear of the sudden death of FWO, a long-time regular and dependable member from Sioux City, Iowa. Two new hams in Winner are KN8SOZ and KN88ZL. Traffic: (Mar.) W8SCT 376, ZWL 211, K9BMQ 168, W0DVB 92, CTZ 27, K0AIE 26, BYV 22, RKJ 19, W0LP 12, K9KLR 12, W0OPF 10, K9LKH 8, BWB 8, BQR 7, DHA 7, PZI 7, LXH 6, DYR 5, DZG 4, DUR 3, W0FJZ 3, K9RQV 3, JAB 2, W8NXX 2, K0OMP 2. (Feb.) K0DYR 12.

MINNESOTA—SCM, Mrs. Lydia S. Johnson, W0KJZ—Asst. SCM: Rollin O. Hall, #LST, SEC: TUS. RM: K9GCN. PAMs: QVR, TUS, TCK. Congratulations K9EWC on your first BPL with 601 points! Jim has worked 49 states on 3815 kc. KN9QLM passed the General Class exam and also received CP-15. Section net certificates were issued to KN8s QBI, QWW and K0LAX. K0HDD, ISV, FYT and TJA had their EC certificates endorsed. New ECs are YAC and K9MEQ. K9MEQ gave a short resumé of amateur emergency communications at a c.d. meeting in Montgomery. ECs GER, VOA and WMA resigned. SEC TUS spoke at the Little Falls and Worthington Clubs. The Mankato ARC's new officers are K0EWC, pres.; K0JYC, vice-pres.; RNY, secy.-treas.; and K0OTF board member. K0DNM is studying the Russian language in an Air Force school. MBD went s.s.b. WMA worked K9IDT cross band using 75 meters to transmit. K0BNZ purchased a set of BC-611 walkie-talkies for emergency use. K9OW has a new Valiant. KIG and TKX sold their Valiants. TKX is going to spend the summer in Europe. The Minneapolis ARC has a new club room at the YMCA on East Lake and Longfellow, and meets the 4th Fri. of each month. The St. Paul RC building-contest winners were K0DUO, K0QGN, K0IKR, EXC, and KN8RSJ, the XYL of EC THY. OYC and his XYL volunteered in W6-Land. PCV's name was found on the list of 430 P.O.W. of the Korean War. He has been missing in action since 1952. We hope that Mort is well and can return home soon. The New Ulm radio club meets twice a month in a public school. QVQ renewed her OPS appointment. DQL and KJZ had their ORS appointments renewed. Up to date, KMG awards presented total 68. K0IKU and JJJ are editors and publishers of the new section net bulletin, *Gopher Log*. These ten have worked 50 or more counties for WAM: KAMNY, K9IDD, K9EWC, K9MAH, K9KVK, FGP, KIG, LST, NNG, and OJG. Traffic: (Mar.) K9EWC 554, W0KJZ 245, K0IDV 240, ORK 20, W0OPX 73, RIQ 58, TUS 48, K9GCN 36, W0KLG 36, OJK 32, TWG 31, HEN 30, K0MPQ 28, MAH 27, MIJ 27, W0KYG 24, LST 21, K0EPT 20, HJC 20, W0KFN 18, ALW 17, K9KYK 17, KN0QLM 17, W0UMX 17, KAMNY 15, W0WMA 14, K0IOW 13, W0BUO 12, TCK 12, OJG 11, DQL 10, K0IDD 8, QEK 8, W0PET 8, OOU 5, FGP 4, OET 4, K0MGT 1. (Feb.) W0DQL 11, K9GFS 6, BNZ 3, KN0QBI 1.

DELTA DIVISION

ARKANSAS—SCM, Ulmon M. Goings, W5ZZY. SEC: K5CIR. PAM: DYL. RM: K5TYW. Our congratulations to K5IPS on making BPL again. The Logan Co. Emergency Net still is going strong each Sun. Interest and participation continues to grow. It seems things are happening with the Pine Bluff Club. FVM has a new XYL, besides having a pair of 6146s p.p. running a full ten watts. K5KGH has a new NC-303 receiver. K5THC has a BC-675. CAM has a BC-601 and like is real proud of it. K5QBQ has a new D-104 microphone and 6-meter rig. K5OXZ has an NC-100 receiver. K5JED and KMK, both in Blytheville, have new 20-A s.s.b. excitors. ZZY finally got up the 20-meter beam after dreading the job for a year. K5TYW has been appointed RM for Arkansas. John is a good c.w. man and sure knows how a c.w. net should be run. We hope all the hams will give him support in keeping the c.w. nets on the air. K5PYD recently had a "beam raising." The turnout of hams was good, so was the fish A.C. served. Traffic: (Mar.) K5TYW 122 HSI 111, W5YHT 68, K5IPS 63, W5CEU 37, BYJ 41, W4OGY/3 22, W5ZZY 10, UED 4.

(Continued on page 122)

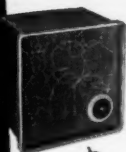
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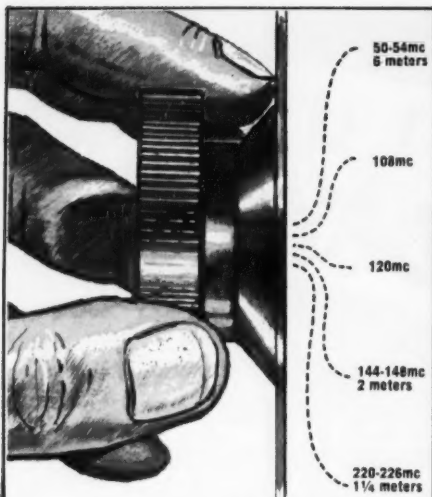
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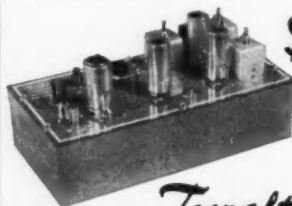
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LOUISIANA—SCM, Thomas J. Morgavi, W5FMO—a report from the Algiers ARC shows that activity has been high with eight new members. An Apache transmitter has been built, shelter drills are being conducted each week in conjunction with the Red Cross. BUK now has 161 countries worked and 121 confirmed. INL is fairly close with 108 worked and 71 confirmed. At a recent AREC meeting in Alexandria K5EFS, the EC, was host to a gathering of practically all the hams in Alexandria and representatives from local broadcast stations, the T&P Railroad, the C.D. Director for the Parish, a representative from the Mayor's office, the Red Cross and others. Nets have been organized and details ironed out. Officers of the Jefferson ARC are QHP, pres.; GAD, vice-pres.; K5HEK, treas.; K5MZD, sec.; MXQ, K5AGJ and EBK, board of directors. PQD has undertaken to organize a communications set-up for Opelousas C.D. All amateurs in and around Opelousas should contact Paul for particulars. A fine letter from OES KTD was received on some 144-Mc. work between Monroe, Minden and Shreveport. Recently a request for an OO application was received from W5IOU/L of Denham Springs, who is a freshman in E.E. at M.I.T. CEZ busted the barrier again with a traffic count of 557. MXQ, who recently acquired a Mosley beam, is now hunting for high-frequency traffic nets. The NITWITS met in Baton Rouge with GDY as host. The Carville project now is to get those Novices changed over to General Class. K5DMA is OPS. CEW has 248 confirmed. Traffic: W5CEZ 557, MXQ 138, K5DMA 8, W5EA 6.

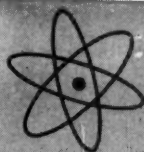
MISSISSIPPI—SCM, J. Adrian Houston, Sr., W5EHH. K5QNE, Hattiesburg, reports organization of The Teen Hams of the Deep South Club which holds weekly meetings. Membership is open to any teen-ager with a genuine interest in amateur radio. The club members are making plans to take part in Field Day activities. Officers are K5QNE, pres.; K5RRS, vice-pres.; K5SNO, sec.-treas.; K5SVR, act. mgr.; K5RDN and K5NTOB, executive committeemen. BW (ex-9BA), Biloxi, reports K5TQO (ex-9VMB) and K5TEB (ex-9TCC) work at Keesler A.F.B. K5TEB recently erected a Hornet tri-band beam. K5TRY is ex-90HK from Belleville, Ill. K5TQM is ex-92LX from Mascoutah, Ill. K5HHQ reports the MMEN held 25 sessions and handled 25 formal messages and 45 informal messages. TXJ reports that 2-meter activity in and around Cleveland is rising. The Cleveland Amateur Radio Club recently received the call K5UFQ. K5DLN has a new radio shack in back of his radio and TV repair shop. K5LEA is on the air with a DX-35. Traffic: (Mar.) K5QNF 220, W5FPI 104, JHS 43, K5QNE 26, MFY 11, HAR 8.

TENNESSEE—SCM, R. W. Ingraham, W4UO—SEC: RRV, RM; NHT, PAMs; UOT, PAH, VQE and ZZ. Congrats to BPL winners RCF and PL. Thanks to NHT, PAH and K4JNK for net reports. New officers of the Kingsport ARC are K4VVM, pres.; K4QNC, vice-pres.; K4QXN, sec.; HKU act. Officers of the Bays Mountain Club are TYT, pres.; K4VNV, vice-pres.; K4VFE, sec.; K4VVM, act. Welcome to K4CNY, a newcomer in Chattanooga already active on the section nets. He runs a Globe Scout and is a fireman. JYM reports there are about 30 stations on 6 meters in Chattanooga. K4OUK has a new Apache. K4LPW reports he still is chasing DX but is becoming a 40-meter s.s.b. rager. TDZ has a new crank-up tower. Thanks to K4LU for his OO report and to K4KYL for his OES report. Traffic: (Mar.) W5RCP 312, W4PL 795, K4JNK 167, W4QGG 97, K4CNY 94, LSP 33, W4VJ 33, CYX 24, PEP 22, IGW 19, UTO 19, NHT 17, TZG 16, UVL 16, K4QEH 12, LPW 11, W4POP 11, PAH 9, K4OUK 8, W4JWM 6, TDZ 6, VTS 3, ZBQ 3, EIN 2, K4KYL 2, W4LLJ 1.

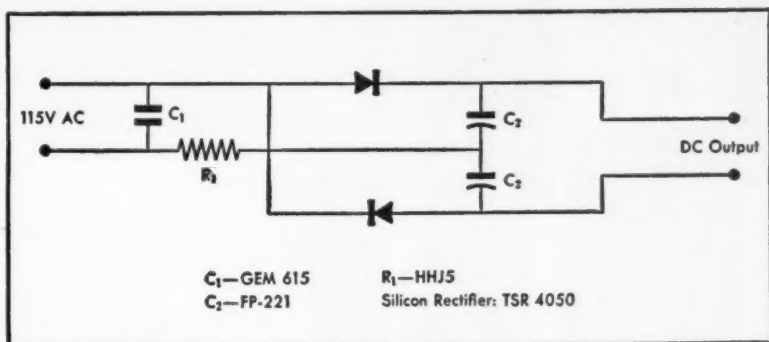
GREAT LAKES DIVISION

KENTUCKY—SCM, Robert A. Thomason, W4SUD—Asst. SCM: W. C. Alcock, 4CDA, SEC: BAZ, RMs: K4ALS and LHQ, PAMs: GTC and K4MMW, S.S.B. PAM: MMY, V.H.F. PAM: K4LOA. We are sorry to lose NGN as S.S.B. PAM as he is leaving this section. His support of all the section nets will be missed. MMY has agreed to replace Bev. Your support of MMY will insure continual growth of s.s.b. for traffic nets. I believe KSN will be a valuable link in any future communication emergency. VJV will replace NGN as EC. Everyone might not have noticed that BAZ is steadily strengthening our emergency communication preparedness. All our section nets have benefited from the civil defense traffic originated by BAZ. New KYN members: K4TIZ. New KPN members: HI and K4RBH. March OO reports were received from ELG, EJA, K4BUB and GAG. K4GTGQ is looking for Lexington 2-meter activ-

(Continued on page 124)



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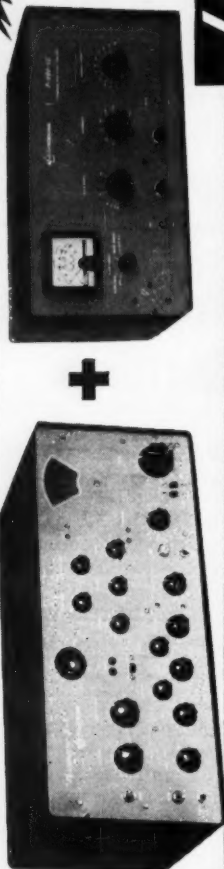
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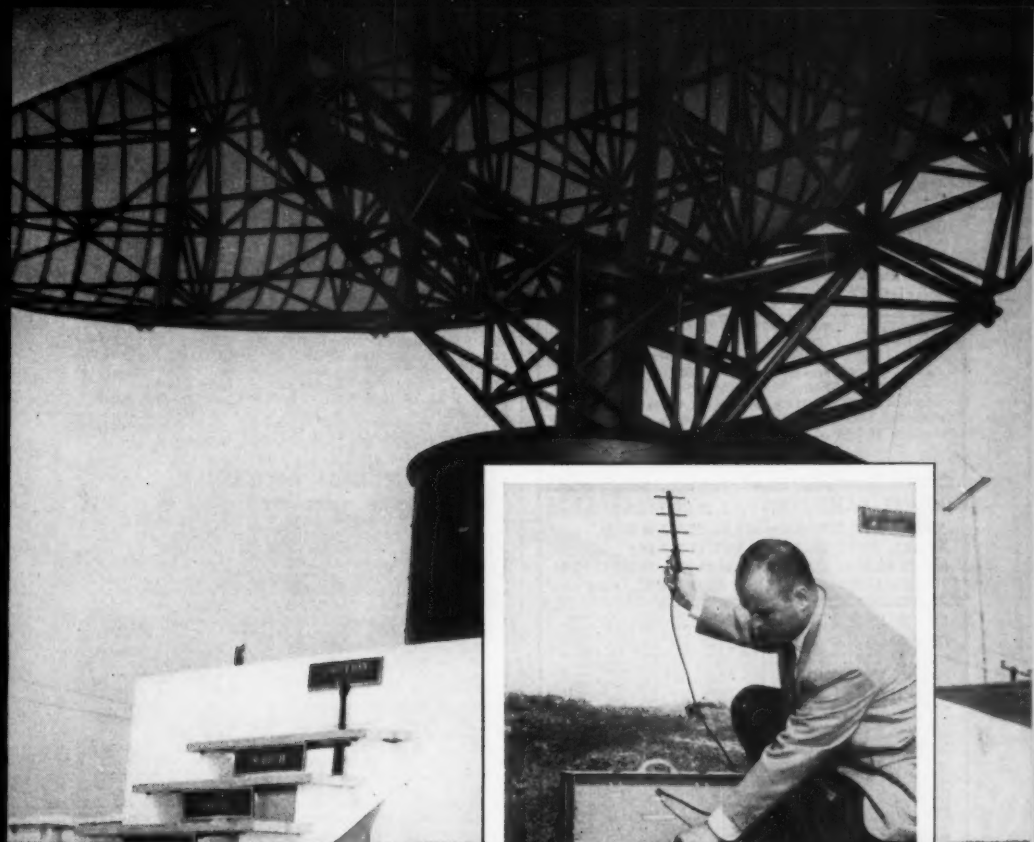


ity. KAPNA is enjoying a new HQ-170. VDL obtained a 9RN certificate for 90 consecutive QNIs. JUI is putting his 13-year-old antenna system into shape. K4QHZ is active on section nets mobile. EC K4CC reports the Harlan Club has a new emergency communication truck. I would like to see several other areas follow their example. KKG worked K84BB DXpedition on 10-meter a.s.b. K4PPK has a big 300-watt signal active in Paducah. Another Kentucky QSO Party will be held in June with a Heath Q Multiplier as first prize. Traffic: K4VDL 652, ZML 185, W4SUD 160, B4Z 159, K4AIS 156, CSH 92, W4GTC 75, K4MMW 57, SBL 42, VTY 40, W4NGN 37, KKG 36, NUQ 36, YV1 34, K4JOP 31, LHQ 31, CC 30, QCN 28, WBG 28, QHZ 22, IFB 19, W4CDA 18, K4MPV 18, W4HWO 16, K4SBZ 16, HOE 11, W4KJP 11, ELG 10, HTD 9, K4PNA 9, QXF 7, W4SLZ 6, EJA 5, K4PPK 5, KIS 3, W4JUI 2, KN7GIQ/4 1.

MICHIGAN—SCM, Thomas G. Mitchell, W8RAE—SEC: 8YAN, RMs: OCC, FWQ and QQO. Well, here I am for another report. To date your new SCM has not been selected, so I'm filling in again. I do want to take this opportunity to express my appreciation to all who have cooperated with me during the past four years. Without that cooperation we would not enjoy the smooth organization that we have in this section. Taking stock of these last few years it is gratifying to realize that we have made quite a good record. Our "working conditions" were improved by the license plate law modifications and by the change in the statute covering the installation of mobile equipments. Both of these were successfully legislated through the efforts of our very good friend HSG/MEX. His loss is still felt. The AREC is growing very orderly under the guidance of our energetic SEC and I'm sure that your continued cooperation with Don will see continued growth of that organization. Our traffic nets have maintained their high standards as shown in the NTS reports. All in all, I'm very proud to have been your SCM and will continue to feel that it has been an honor to serve. Thanks for your many letters and messages. Very 73 and the best of luck to all.—TGM/W8RAE, Traffic: (Mar.) W8OCC 205, QQO 169, FWQ 130, YAN 130, K8LYN 129, W8YJY 120, FX 94, JKN 75, RTN 75, NUL 71, K8AEM 40, W8NOH 31, K8GJD 30, W8TLJ 29, K8ABW 27, W8ILP 27, DSE 21, RAE 20, SCW 17, TBP 13, UOQ 12, MHZ 11, K8NAW 11, W8WXX 10, AUD 8, SJF 8, K8CKD 7, W8WVL 6, HKT 5, FSZ 3, FOV 2. (Feb.) W8NUL 51, TBP 43.

OHIO—SCM, Wilson E. Weekel, W8AL—Asst. SCM: J. C. Erickson, 8DAE, SEC: UPB, RMs: DAE and VTP, PAMs: HZJ and WYS. New appointments: K8HGT as ORS, WYS as PAM, DAC and IUT joined "Silent Keys." WAB was in Nevada on business. The Columbus ARA's *Carascope* informs us that UXJ spoke on "Electronics Part in the Electrical Utility." The v.h.f. group demonstrated a person-to-person QSO on television on 432 Mc. between DMH and RJJ as a possible "amateur first." Cuyahoga County's AREC furnished communication to the mobiles used to pick up the money at the end of the Mothers' March on Polio with the following taking part: AEU, BHR, CPP, EFB, LFF, LHX, NRI, NZI, PVC, SZU, TFR, TFV, ZFU, K8 AAP, ABA, BWB, DEJ, DPA, DZL, ELX, GJW, GZQ, HVB, IHC, JGG, JHZ, JIC, KKO, KNG, KNI, KNJ, MBV and MBW. Toledo's *Shack Gossip* tells us that K8GZW and K8NGZK moved to Arizona and are now K7CPZ and K7CPY. K8CRF and K8JDS are in the hospital. VJO is on 6 meters, K8NQJ is a new YL ham, TZO is on 6 meters with a Seneca, HYE is mobile on 10 meters, UKX visited in Texas, K8LNX is a new ham in Attica, RER is back on 75 meters, the stork brought a baby boy to KGK, K8KE and K8LVR received their General Class tickets. DAE sent in newspaper clippings from Cleveland papers on local amateurs—one to CTZ, who is blind; another on father-son team, GTJ and K8LEX; and the third on LIO, who acted as pivot man "Tinker-to Evers-to Chance," relaying traffic between two widely-separated Jesuit priests in the Antarctic. The Northeastern Ohio 50-Mc. Group Picnic will be held June 21 at Wadsworth Municipal Park. A 6-meter station will be set up to guide mobiles there. Major prizes will be a Seneca 6 and 2 transmitter and a National 303 receiver. Get your tickets from Rev. C. A. Borkey, K8LMG, 3156 Rosebay Blvd., Barberton, Ohio. New hams in Sandusky are K8NXXN with a DX-20 and an 8-85, K8NXXO with a DX-40 and an 8-38E and K8MAZ with a new Mohawk. K8JPL is mobile. K8GIU has a new DX-100. Those taking part in the Trumbull County flood alert were AQW, BND, FBG, GGS, HCA, HRF, KCE, KFE, RGD, PTQ, QMS, RZK, TWO, UYX, WOL, K8 AZY, KFS, LCX and LSI received their General Class tickets. A new ham is K8NORS, K8JUZ built 2- and 10-meter beams. GGS and K8HQX are on 2 meters. K8LCX has a new

(Continued on page 126)



RAYTHEON FIELD ENGINEER REUBEN PULLEN, K6UPR, operating portable L-band jammer of his own design and diverting jamming signal toward Raytheon 40-foot antenna at long-range radar site.



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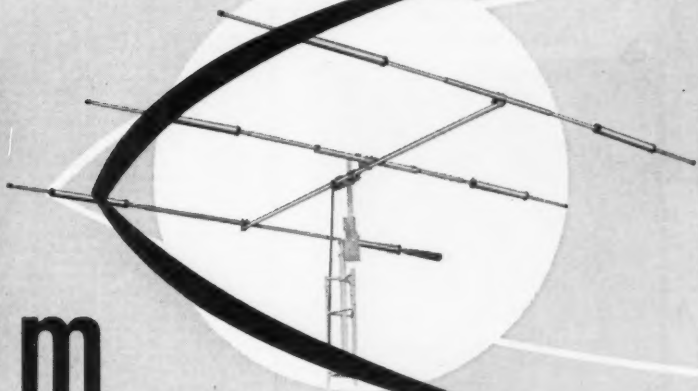
40 Met. 7150-7198—Steps of 1 KC. FT-243 only

Dbl. to 40 Met. 3576-3599. Steps of 1 KC. FT-243 or DC-34

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4035	4095	4155	4215	4275	4335	4395	4455	4515	4575	4635	4695	4755	4815	4875	4935	4995	5055	5115	5175	5235	5295	5355	5415	5475	5535	5595	5655	5715	5775	5835	5895	5955	6015	6075	6135	6195	6255	6315	6375	6435	6495	6555	6615	6675	6735	6795	6855	6915	6975	7035	7095	7155	7215	7275	7335	7395	7455	7515	7575	7635	7695	7755	7815	7875	7935	7995	8055	8115	8175	8235	8295	8355	8415	8475	8535	8595	8655	8715	8775	8835	8895	8955	9015	9075	9135	9195	9255	9315	9375	9435	9495	9555	9615	9675	9735	9795	9855	9915	9975	10035	10095	10155	10215	10275	10335	10395	10455	10515	10575	10635	10695	10755	10815	10875	10935	10995	11055	11115	11175	11235	11295	11355	11415	11475	11535	11595	11655	11715	11775	11835	11895	11955	12015	12075	12135	12195	12255	12315	12375	12435	12495	12555	12615	12675	12735	12795	12855	12915	12975	13035	13095	13155	13215	13275	13335	13395	13455	13515	13575	13635	13695	13755	13815	13875	13933	13995	14055	14115	14175	14235	14295	14355	14415	14475	14535	14595	14655	14715	14775	14835	14895	14955	15015	15075	15135	15195	15255	15315	15375	15435	15495	15555	15615	15675	15735	15795	15855	15915	15975	16035	16095	16155	16215	16275	16335	16395	16455	16515	16575	16635	16695	16755	16815	16875	16933	16995	17055	17115	17175	17235	17295	17355	17415	17475	17535	17595	17655	17715	17775	17835	17895	17955	18015	18075	18135	18195	18255	18315	18375	18435	18495	18555	18615	18675	18733	18795	18855	18915	18975	19035	19095	19155	19215	19275	19335	19395	19455	19515	19575	19635	19695	19755	19815	19875	19933	19995	20055	20115	20175	20235	20295	20355	20415	20475	20535	20595	20655	20715	20775	20833	20895	20955	21015	21075	21135	21195	21255	21315	21375	21435	21495	21555	21615	21675	21733	21795	21855	21915	21975	22035	22095	22155	22215	22275	22335	22395	22455	22515	22575	22635	22695	22755	22815	22877	22935	22995	23055	23115	23175	23235	23295	23355	23415	23475	23535	23595	23655	23715	23777	23835	23895	23955	24015	24075	24135	24195	24255	24315	24375	24435	24495	24555	24615	24677	24735	24795	24855	24915	24977	25035	25095	25155	25215	25277	25335	25395	25455	25515	25577	25635	25695	25755	25815	25877	25935	25995	26055	26115	26177	26235	26295	26355	26415	26477	26535	26595	26655	26715	26777	26835	26895	26955	27015	27077	27135	27195	27257	27315	27377	27435	27495	27557	27615	27677	27735	27795	27857	27915	27977	28035	28095	28157	28215	28277	28335	28395	28457	28515	28577	28635	28695	28757	28815	28877	28935	28995	29057	29115	29177	29235	29295	29357	29415	29477	29535	29595	29657	29715	29777	29835	29895	29957	30015	30077	30135	30195	30257	30315	30377	30435	30495	30557	30615	30677	30735	30795	30857	30915	30977	31035	31095	31157	31215	31277	31335	31395	31457	31515	31577	31635	31695	31757	31815	31877	31935	31995	32057	32115	32177	32235	32295	32357	32415	32477	32535	32595	32657	32715	32777	32835	32895	32957	33015	33077	33135	33195	33257	33315	33377	33435	33495	33557	33615	33677	33735	33795	33857	33915	33977	34035	34095	34157	34215	34277	34335	34395	34457	34515	34577	34635	34695	34757	34815	34877	34935	34995	35057	35115	35177	35235	35295	35357	35415	35477	35535	35595	35657	35715	35777	35835	35895	35957	36015	36077	36135	36195	36257	36315	36377	36435	36495	36557	36615	36677	36735	36795	36857	36915	36977	37035	37095	37157	37215	37277	37335	37395	37457	37515	37577	37635	37695	37757	37815	37877	37935	37995	38057	38115	38177	38235	38295	38357	38415	38477	38535	38595	38657	38715	38777	38835	38895	38957	39015	39077	39135	39195	39257	39315	39377	39435	39495	39557	39615	39677	39735	39795	39857	39915	39977	40035	40095	40157	40215	40277	40335	40395	40457	40515	40577	40635	40695	40757	40815	40877	40935	40995	41057	41115	41177	41235	41295	41357	41415	41477	41535	41595	41657	41715	41777	41835	41895	41957	42015	42077	42135	42195	42257	42315	42377	42435	42495	42557	42615	42677	42735	42795	42857	42915	42977	43035	43095	43157	43215	43277	43335	43395	43457	43515	43577	43635	43695	43757	43815	43877	43935	43995	44057	44115	44177	44235	44295	44357	44415	44477	44535	44595	44657	44715	44777	44835	44895	44957	45015	45077	45135	45195	45257	45315	45377	45435	45495	45557	45615	45677	45735	45795	45857	45915	45977	46035	46095	46157	46215	46277	46335	46395	46457	46515	46577	46635	46695	46757	46815	46877	46935	46995	47057	47115	47177	47235	47295	47357	47415	47477	47535	47595	47657	47715	47777	47835	47895	47957	48015	48077	48135	48195	48257	48315	48377	48435	48495	48557	48615	48677	48735	48795	48857	48915	48977	49035	49095	49157	49215	49277	49335	49395	49457	49515	49577	49635	49695	49757	49815	49877	49935	49995	50057	50115	50177	50235	50295	50357	50415	50477	50535	50595	50657	50715	50777	50835	50895	50957	51015	51077	51135	51195	51257	51315	51377	51435	51495	51557	51615	51677	51735	51795	51857	51915	51977	52035	52095	52157	52215	52277	52335	52395	52457	52515	52577	52635	52695	52757	52815	52877	52935	52995	53057	53115	53177	53235	53295	53357	53415	53477	53535	53595	53657	53715	53777	53835	53895	53957	54015	54077	54135	54195	54257	54315	54377	54435	54495	54557	54615	54677	54735	54795	54857	54915	54977	55035	55095	55157	55215	55277	55335	55395	55457	55515	55577	55635	55695	55757	55815	55877	55935	55995	56057	56115	56177	56235	56295	56357	56415	56477	56535	56595	56657	56715	56777	56835	56895	56957	57015	57077	57135	57195	57257	57315	57377	57435	57495	57557	57615	57677	57735	57795	57857	57915	57977	58035	58095	58157	58215	58277	58335	58395	58457	58515	58577	58635	58695	58757	58815	58877	58935	58995	59057	59115	59177	59235	59295	59357	59415	59477	59535	59595	59657	59715	59777	59835	59895	59957	60015	60077	60135	60195	60257	60315	60377	60435	60495	60557	60615	60677	60735	60795	60857	60915	60977	61035	61095	61157	61215	61277	61335	61395	61457	61515	61577	61635	61695	61757	61815	61877	61935	61995	62057	62115	62177	62235	62295	62357	62415	62477	62535	62595	62657	62715	62777	62835	62895	62957	63015	63077	63135	63195	63257	63315	63377	63435	63495	63557	63615	63677	63735	63795	63857	63915	63977	64035	64095	64157	64215	64277	64335	64395	64457	64515	64577	64635	64695	64757	64815	64877	64935	64995	65057	65115	65177	65235	65295	65357	65415	65477	65535	65595	65657	65715	65777	65835	65895	65957	66015	66077	66135	66195	66257	66315	66377	66435	66495	66557	66615	66677	66735	66795	66857	66915	66977	67035	67095	67157	67215	67277	67335	67395	67457	67515	67577	67635	67695	67757	67815	67877	67935	67995	68057	68115	68177	68235	68295	68357	68415	68477	68535	68595	68657	68715	68777	68835	68895	68957	69015	69077	69135	69195	69257	69315	69377	69435	69495	69557	69615	69677	69735	69795	69857	69915	69977	70035	70095	70157	70215	70277	70335	70395	70457	70515	70577	70635	70695	70757	70815	70877	70935	70995	71057	71115	71177	71235	71295	71357	71415	71477	71535	71595	71657	71715	71777	71835	71895	71957	72015	72077	72135	72195	72257	72315	72377	72435	72495	72557	72615	72677	72735	72795	72857	72915	72977	73035	73095	73157	73215	73277	73335	73395	73457	73515	73577	73635	73695	73757	73815	73877	73935	73995	74057	74115	74177	74235	74295	74357	74415	74477	74535	74595	74657	74715	74777	74835	74895	74957	75015	75077	75135	75195	75257	75315	75377	75435	75495	75557	75615	75677	75735	75795	75857	75915	75977	76035	76095	76157	76215	76277	76335	76395	76457	76515	76577	76635	76695	76757	76815	76877	76935	76995	77057	77115	77177	77235	77295	77357	77415	77477	77535	77595	77657	77715	77777	77835	77895	77957	78015	78077	78135	78195	78257	78315	78377	78435	78495	78557	78615	78677	78735	78795	78857
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Streamlined grace combines with the look of rugged strength to make MOSLEY Trap Master Antennas pleasing to the eye and completely acceptable to your neighbors.

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(Illustrated, is the world-famous TA-33. Rated to maximum legal power, this 3 element beam performs wonderfully on 10, 15 and 20 meter bands. Factory pre-tuned for quick, easy assembly without tedious measuring. AMATEUR NET, \$99.75)

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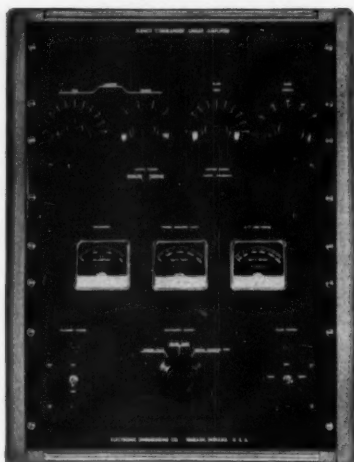
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Although designed to commercial specifications, the Elenco Commander operates with excellent efficiency at the legal amateur power limit of 1 kw average d.c. input. Working well within its rating, the amplifier gives superior performance on five amateur bands, 10 through 80 meters.

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time earning Worked All Mass., Worked Westchester Co., 2-Meter Century Club awards and snagging 74 countries. K2TBW is on the air from Lehigh U., W3AEQ. K2TPU's sister, W2BEA, is on 15-meter c.w. K2UBG is acting manager for the Mike-Farad Net. W2KTU earned the W-Conn award on c.w. New officers of the Stuyvesant HSBC are K2VDE, pres.; K2UMT, vice-pres.; K2KVL, secy. and W2TOX, trustee. K2PTS put a \$22 on 144 Mc. The ARTS publication, devoted to RTTY, is very interesting. It brings to mind the fact that very few RTTY notes are received by the SCM. How about it, fellows? Any traffic reports, news, etc.? K28JP joined Army MARS. W2CDQ is on the air with a DX-20 and an 8-55. K2SVY installed a complete Tecraft installation for 6-meter mobile. W2VDT has now reached 107 countries worked and needs only a few more cards for DXCC. A fine gathering was on hand for the Eighth Annual S.S.B. Dinner sponsored by the SSBARA, a very rapidly-expanding organization. W2JUP is off to South America for a three-year stay. K2YHD has a new DX-100. K2EYJ is in W6-Land. K2IRS is interested in raising funds for fun and profit. W2LXC is going mobile. W2NGU is returning to 20-meter c.w. It recently was necessary to mail 45 appointment expiration notices. This is time-consuming and takes valuable time from other work. Please check your appointment dates. If your report does not appear as expected in this column it is possibly because of a mix-up in mail brought about by a month's delay in my moving plans. Good luck to all on Field Day. Remember those messages to the SEC or SCM. BCNU from W2YKQ/2. Traffic: (Mar.) W2KEB 3471, W2VDT 298, K2VCO 210, W2EW 84, K2MIG 64, K2IRS 57, K2PHF 39, W2DRD 25, W2LKG 24, K2HVV 23, K2DEM 20, K2RBS 18, K2VIX 8, K2YQK 4, K2AZT 3, W2JGV 2, W2MDM 2, K2MEM 1. (Feb.) W2OME 8.

NORTHERN NEW JERSEY—SCM, Edward Hart, jr., W2ZVW—SEC: W2IIN. RMs: W2RXL and W2ADE. PAMS: K2KVR and K2VAC. The New Jersey Net meets daily on 3695 kc. at 1900. During March, NJN had 31 sessions with an attendance of 615 and handled 313 messages. The NJ6 Net, on 51.150 kc. at 2300, had 8 sessions with 215 stations and 115 traffic total. W2OPB tried working 2 meters in the back yard and got wet. W2RXL, manager of NJN, now is publishing a net bulletin. K2ZHK, manager of the New Jersey Slo Speed Net, reports an attendance of 71 in 22 sessions with traffic totaling 46. K2VVL made the BPL. K2VAB brags about his first PY contact. K2GIF has a new frequency-shift exciter. K2IZN/2 is active on NJN. K2MFE attended the IRE and ESN Conventions. W2AYI hopes to start the Eastern Area Slow Speed Net soon. W2CVW has worked 100 countries. All he has to do now is get the cards. K2LXL is a new OPS. W2CFB is the proud owner of a new HQ-170. W2EWZ was visited by K2OY and visited K2VVL. K2MFX is putting up a 45-ft. tower for 2 and 10 meters. W2BVE has the RTTY receiver in action. K2UKQ placed fifth in the CD Party, her first try at it. W2VCZ is battling the bugs in the 833A final. K2PBP has a new beam, a new rotor and a new converter. W2GVU may be in DU-Land this coming winter. Watch for him. The Night Owl Net meets every Thurs. at 2100 on 29.0 Mc. Officers are K2MAH, pres.; K2UCY, vice-pres.; K2YNQ, secy.; K2OQS, trans. Officers of a new club, the Freehold ARC, are K2LIV, pres.; K2YXY, vice-pres.; W2SQN, trans.; W2VCT, secy. The Garden State ARA began Novice code classes during March. K2SRD passed the General Class exam and is active on 40-meter c.w. W2PTS needs 5 more states for WAS. Traffic: W2OPB 184, W2RXL 170, K2ZHK 166, K2VVL 141, W2ZVW 128, K2VAB 108, K2GIF 70, K2IZN/2 60, K2YJH 59, K2EQP 38, W2EBG 36, K2MFE 34, W2ADE 26, W2AYI 26, W2RZO 25, W2DRV 24, W2CVW 23, K2VAC 18, K2LWQ 17, W2RON 15, W2BRC 14, W2CFB 14, K2JTU 13, K2AGJ 12, W2ACCF 12, W2EWZ 12, K2MFX 12, K2VLU 8, W2KFR 5, W2BVE 3, W2CJX 2, W2NIY 2.

MIDWEST DIVISION

IOWA—SCM, Russell B. Marquis, W8BDR—Asst. SCM, Walter G. Porter, #UJC, SEC: MG. PAMS: YUA and K2CIG. RM: LGG. Officers of the Ottumwa Club are K20TLK, pres.; K2OCC, vice-pres.; K2SVX, secy.; and SVB, trans. New appointments: GKN as OBS, ZVY as OO and K2DQI as EC. Renewals: BXG, VWF, PP and K2AHZ as OPS; MJH, EEG, KHN and K2BRE as ECs; AHZ as OO; and NYX as ORS. K2LHH and AGJ received TLN Section Net certificates. QVA has a new HQ-160 and LJW has an HQ-170. BTR, BTX, VCM, FSO, K2JDK, AHZ, JTL, JVL and K2QWO set up a complete station during the Red Cross Open House Day at Webster City. The 160-Meter Net Picnic will be held June 26 in Webster City. K20TLJ is a new Novice in Ottumwa. EIC and FWO have joined Silent Keys. PP is operating d.s.b. on 40 meters. Anyone interested in a teletype club is invited

(Continued on page 130)

TELREX MONARCH

"TRI-BAND" Model TBS-626

Amateur Net **\$259.75** F.O.B. Asbury Park
New Jersey

KING... of all Single-Transmission-Line Arrays!

Telrex... tuned, matched, and calibrated, for easy assembly (to your favorite band sectors) and specified Telrex performance at your site... without tuning or adjustments of any kind required or recommended. The TBS-626 consists of a 26 ft. boom, a 26 ft. boom, providing optimum 4 element 10 meter, and optimum 3 element 15 and 20 meter performance. Separate, properly spaced, reflectors, provide optimum F/B ratio on the 3 bands with no gain degradation!

Model TBS-626 is destined to become a classic, and is engineered to provide maximum performance and satisfaction per dollar... per element. No finer single-transmission-line "Tri-Band" is possible! The following specifications, patterns, and V/S/W/R curves tell the complete story:

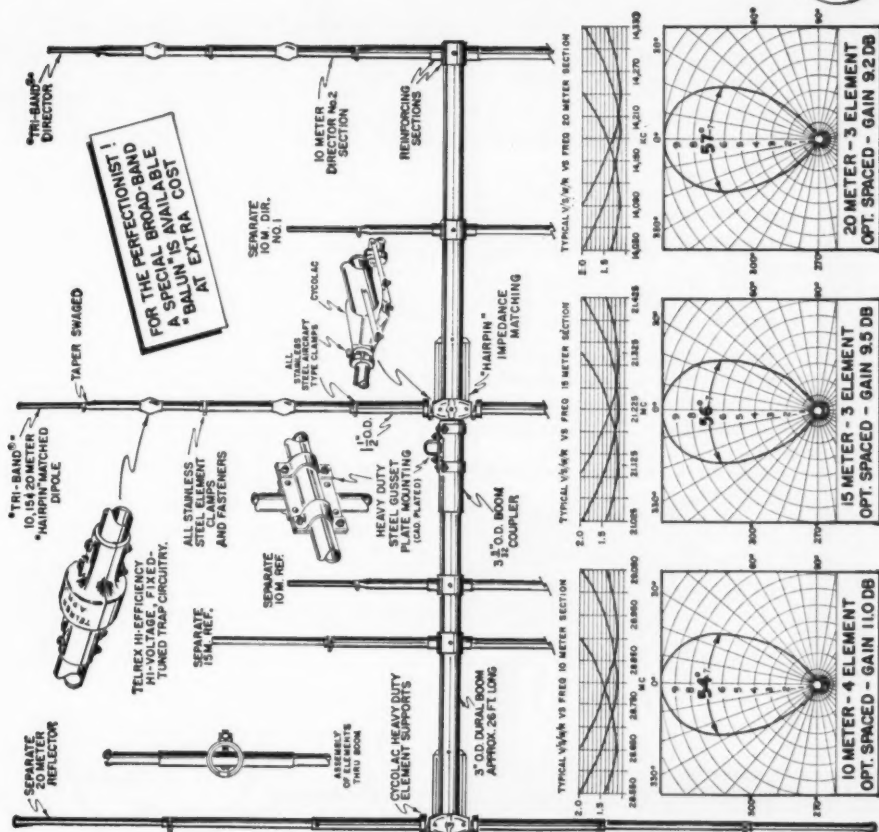
Support mast required 2" O.D. — Seamless .125 wall min. 5.50 ft. high
Wind load at 100 m.p.h. — 300 lbs.
Recommended rotator — Telrex Models 500-RIS or 1758
Design wind load rating with 1/2" radial ice load — 110 m.p.h.
Antenna net wt. — 77 lbs. — Shipping container 12" x 12" x 14 ft. approx. — 159.50
Telrex "Tri-Band" — 159.75
CHALLENGER SERIES TBS-308
3 Element (8' x 2" O.D. Boom) gain 5 dB. Recommended Rotator — Telrex 1758 or CDR
CHALLENGER SERIES DTB-30
Rotatable 10, 15 and 20 Meter "Tri-Band" — 38.50
Bi-directional pattern. Any good TV rotator may be used.

NOTE: — Also available, lower cost Telrex "Tri-Band" — 159.75
designed to outperform and still be confident of and send for data sheet of model in which you are interested:

CHALLENGER SERIES TBS-416
4 Element (15' x 2" O.D. Boom) gain 8 db. Recommended Rotator — Telrex 1758
CHALLENGER SERIES TBS-308
3 Element (8' x 2" O.D. Boom) gain 5 dB. Recommended Rotator — Telrex 1758 or CDR
CHALLENGER SERIES DTB-30
Rotatable 10, 15 and 20 Meter "Tri-Band" — 38.50
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141 MODELS TO CHOOSE FROM — \$5.95 TO \$590.00, 3/4 METER TO 40 METERS

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*Put your beam where you want it
"the E-Z WAY!"*

★ Put your Tribander at 41' in 70 mph wind (125 mph cranked down to 24').

★ Tilts over for E-Z access to array.

★ Mounts Ham-M Rotor inside tower head. Top radial bushing - vertical thrust bearing.

★ E.I.A. TR-116 specs. Heavy wall structural steel tube legs, solid steel rod diagonal & horizontal bracing - arc welded.

★ Safety rest locks tower at desired height. No weight on cables.

MODEL RBS-40P. Dip painted-7'x1.90" OD mast furnished. Am. Net. **\$155.00**

MODEL RBS-40G. Hot dipped galvanized, stainless steel cables, 7'x1.90" OD mast furnished. Am. Net. **\$195.00**

MOUNTING KITS:

MODEL GPK-540. Featuring tilt-over "Wonder Ground Post" - no concrete required! Am. Net. **\$70.00**

MODEL BAK-540. Galvanized wall bracket & hinged base. Am. Net. **\$10.50**

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to contact NTB, LGG reports that the TLGN will go on summer schedule June 1. K00ID is a new TLGN member. LYV and LYX have moved to Texas. AEH is back from wintering in Arizona. K0QAI has received his General Class ticket. Traffic: (Mar.) W0BDR 2815, LGG 1331, LCX 968, K0CLS 264, W0GXQ 204, PZO 128, K0BLJ 112, AGJ 104, CYF 63, W0QVA 33, K0GXP 45, W0NGS 45, OFW 40, K0LHH 32, MMS 30, W0BTX 25, K0MMZ 26, MFX 22, W0SLC 21, K0APL 20, W0WYB 20, K0CXN 18, W0CGL 17, J0J 14, UTD 14, K0KAQ 13, G0Q 12, JGM 11, W0MEL 11, VWF 10, YDV 9, K0QKF 8, W0RQA 8, BQJ 7, UHO 7, COD 6, K0QWM 6, W0SCA 6, K0IHC 5, QAI 5, BPR 4, KBX 4, W0EEG 3, PAN/0 3. (Feb.) K0CYF 38.

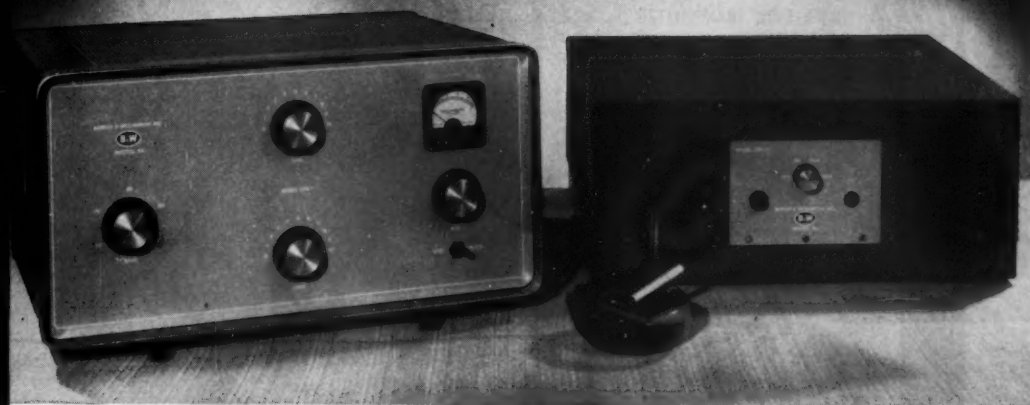
KANSAS-SCM, Raymond E. Baker, W0FNS-SEC: IFR, Asst. SEC: LOW, RM: QGG, PAM: LEW, V.H.F. PAM: HAJ. Appointments: LOW, Colby, has been appointed as Asst. SEC Kansas. Doc has a new HQ-170, ZUX is now EC for Zone 21. New OPs are GJG, WFD, K0JIG and K0EFL. VGE has her new station set up and it is really nice. New calls in Goddard are K0EWW, K0NTBU Eileen and K0NTGS Nancy. K0DIW and other stations worked portable/mobile to help the boys get some hard contacts in the counties on WAK. K0JXX advises he will have to curtail his activities because of school work. Nets: KPN Section Phone, 3920 kc., 0645 Mon., Wed., Fri., 0800 Sun. LEW manager; QKS Section C.W., 1830 daily. QGG manager. Your SCM was rockbound in the hospital for few days recently. NXJ has a new 15-meter beam. IFR has a new beam. Some very fine club publications: *Hi-Plains QRM* by the Hi-Plains Club; *CKPC JNK* by the Salina Club; *The Log* by the Flint Hills Club. El-dorado. Traffic: (Mar.) W0BLI 641, FNS 205, TOL 191, QGG 183, IFR 132, SYZ 110, SAF 106, K0JXX 101, W0RJR 88, K0HGI 84, W0UTO 60, K0BXF 55, W0WWT 51, K0BIX 47, W0ABJ 44, K0MMF 40, W0VUI 23, K0KMZ 22, W0TTG 20, LEW 19, K0HL 18, W0BBO 14, SKW 14, GJG 11, LEA 11, WFD 11, FHT 10, K0JID 10, EFL 9, W0MDU 9, LOW 9, K0EMF 8, W0LIX 7, WIZ 7, FDJ 4, K0GIG 4, CJL 3, W0FHU 3, ASY 2, (Feb.) W0BLI 349, TOL 155, WWT 72, K0MRW 14, W0FDJ 8, RJF 8, TTG 6.

MISSOURI-SCM, C. O. Gosch, W0BUL-Net reports: MON, 3850 kc. 7 p.m. Mon. through Sat. Handicapper PN, QNI 56, QTC 75; MEN, 3885 kc. 6 p.m. Mon., Wed., Fri., 13 sessions, QNI 479, QTC 145, NCS OHC 4, OVY 1, VPQ 5, OMM 3. Appointments: SEC, K0LTP; PAM (E. Mo.), BVL; PAM (W. Mo.), OMM; Mgr. MEN, OMM; ORS, GEP; EC (Raytown, 6 meters), OMM. Endorsements: ORS, GCL; OPs, BVL, OMM; ECs, THI, OHC and DFK. PME reports observation of over one hundred discrepancies in the c.w. bands during the month. TLG moved to Iowa but is still active on MEN. WEN is building kw. rigs for both a.m. and s.s.b. K0IFM won two trips to Las Vegas at a home show. The ARRL Midwest-Central Division Convention will be held in St. Louis (Chase Hotel) Aug. 22 and 23. K0CNP is on 2 meters with an SCR-522. K0CHZ received BSEE from Rolla and he and his XYL (K0DEY) are moving to Kansas. The Riverside ARC (St. Louis) is offering a certificate for QSOs with the St. Louis gang. K0QIC received a CP certificate. New officers of the Tri-State Radio Society (Joplin) are K0CCN, pres.; RIP, vice-pres.; PKI, sec.; K0JAY, treas. K0CYS is on 6 meters at a new QTH. WAP and K0ABK report activity on 6 meters. K0CFY has a new triband beam with FB DX contacts. K0LIN had an FB QSO with VE4QX, who was using nine watts on 75-meter phone. K0CIX is secretary of a newly-formed Amateur Radio Technical Society of St. Louis. Traffic: (Mar.) W0CPI 812, K0KBD 719, W0BVL 185, K0LIN 210, ONK 160, W0OMM 146, OUD 88, K0OEP 86, W0KIK 76, K0QJC 76, W0VPQ 67, OVY 37, KA 32, K0CFY 22, W0GEP 15, WAP 14, RAP 12, TBI 11, MDG 9, QMK 7, BUL 5, K0LGZ 5, IHY 4, W0GBJ 1. (Feb.) K0JPH 43.

NEBRASKA-SCM, Charles E. McNeel, W0EXP. My term as your SCM expires with this report and I would like to thank each and every one of you who have helped with my duties as SCM. The Western Nebraska Net reports via NIK NC, QNI 656, QTC 108. Those reporting 100 per cent during March were K0AIE, K0BMQ, W0DVB, K0LEQ and W0NIK. The Nebraska 75-Meter Emergency Net is on 3983 kc. daily at 12:30 CST and ZWG, who has been elected to fill out the term as net manager, reports QNI 198, QTC 17. The Nebraska C.W. Net reports QNI 151, QTC 79. Traffic: (Mar.) W0RIN 250, NYU 203, K0DGW 179, W0NIK 98, ZWG 85, K0BDF 73, MRS 63, LJW 56, KUA 54, W0ZJF 46, K0HKI 41, CDG/835, W0VEA 35, OKO 34, VZJ 26, KDW 24, K0ELQ 20, MSS 20, GJR 18, W0HOP 18, BOQ 16, OCU 16, URC 15, PUA 12, ZOU 12, COV 10, W0ZS 8, K0CGL 7, W0JLO 7, K0RPT 7, W0HTA 6, QKR 6, EQG 5, ATU 4, K0CYN 4, KJP 3, QLN 3, W0WKP 3, AFG 2, K0HYA 2, W0PZH 2. (Jan.) K0DGW 251.

(Continued on page 132)

POWER... PACKAGED FOR TODAY'S AMATEUR



LPA-1 GROUNDING GRID LINEAR AMPLIFIER
NET PRICE \$375.00 COMPLETE WITH TUBES

LPS-1 POWER SUPPLY
NET PRICE \$205.00 COMPLETE WITH TUBES

Power—a full kilowatt with this smartly designed, excellently styled version of the famous B&W linear amplifier family! New compactness . . . takes up no more space on your table than a receiver. New features . . . for greater performance and flexibility than ever before.

Separately housed LPA-1 R. F. section employs two Type 813 beam power tetrode tubes, connected as high-Mu triodes in a grounded-grid circuit. Blower, filament and bias supply are included in this section.

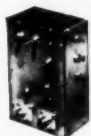
High voltage power supply unit LPS-1 may be remotely located. Switching control panel is removable for convenient installation at the operator's location. Circuit consists of a full wave single phase bridge rectifier, using four Type

816 mercury vapor rectifier tubes. R. F. filtering protects tubes and prevents mercury vapor hash radiation.

The LPA-1 can be driven by most exciters in the 100 watt class, such as the B&W 5100/5100B series, Vikings 1 and 2, Valiant, Collins 32V, KWM-1, 32S-1 series, Heath DX100 and others.

A compact impedance matching unit, the B&W LPA-MU, is separately available. It provides for operation with fixed output exciters such as the Hallicrafters HT 32 Series and similar types. A similar unit, the LPA-MU-2, is also available for use with the B&W L-1000-A and L-1001-A.

Your local distributor should have these advanced units now . . . see them soon.



LPA-MU MATCHING UNIT
LPA-MU-2

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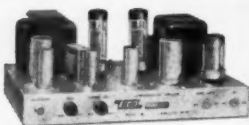
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90-WATT CW TRANSMITTER . . #720

KIT \$79.95 WIRED \$119.95

Conservative, highly efficient design plus stability, safety, and excellent parts quality. 80 thru 40, 20, 15, 11, 10 meters (popular operating bands) with one knob band-switching. 6146 final amplifier for full "clean" 90 W input, protected by clamper tube. 6CL6 Colpitts oscillator, 6AQ5 clamper, 6AQ5 buffer-multiplier, GZ34 rectifier. "Novice limit" calibration on meter keeps novice inside FCC-required 75W limit. No shock hazard at key. Wide range, hi-efficiency pi-network matches antennas 50-1000 ohms, minimizes harmonics. EXT plate mod. terminals for AM phone modulation with 6SW input. Excellent as basic exciter to drive a power amplifier stage to max. allowable input of 1KW. Very effective TVI suppression. Ingenious new "low silhouette" design for complete shielding and "living room" attractiveness. Conservatively rated parts, copper-plated chassis, ceramic switch insulation. 5" H, 15" W, 9 1/2" D.



NEW UNIVERSAL MODULATOR-DRIVER #730

KIT \$49.95 WIRED \$79.95 Cover E-5 \$4.50

Superb, truly versatile modulator at low cost. Can deliver 50 W of undistorted audio signal for phone operation, more than sufficient to modulate 100% EICO 720 CW transmitter or any other whose RF amplifier has plate input power of up to 100W. Multi-match output smf matches most loads between 500-10,000 ohms. Unique over-modulation indicator permits easy monitoring, no need for plate meter. Low distortion feedback circuit, with peak speech freq. range circuitry. Low distortion feedback circuit, premium quality audio power pentodes, indirectly heated rectifier filament. Balance and bias adj. controls. Inputs for static or dynamic mikes, etc. Excellent deluxe driver for high-power class B modulation. ECC83/12AX7 speech amp., 6AL5 speech clipper, 6AN8 amp. driver, 2-EL34/6CA7 power output, EM84 over-mod. indicator, GZ34 rect. Finest quality, conservatively rated parts, copper-plated chassis. 6" H, 14" W, 8" D.

NEW GRID DIP METER #710

KIT \$29.95 WIRED \$49.95 including complete set of coils for full band coverage.



Exceptionally versatile. Basically a VFO with micro-ammeter in grid, determines freq. of other osc. or tuned circuits; sens. control & phone jack facilitate "zero beat" listening. Excellent absorption wave meter. Ham uses: pre-tuning & neutralizing; smf, power indication, locating parasitic osc., antenna adj., correcting TVI, de-bugging with smf power off, determining C.O. Servicing uses: alignment of filters, IF's, as sig. or marker gen. Easy to hold & thumb-tune with 1 hand. Continuous 600 KC-250 mc. coverage in 8 ranges, pre-wound 0.5% accurate coils. 500 ua meter movement. 6AF4/A or 6TA Colpitts osc. Zener-operated tel. rect. 2 1/2" H, 2 1/2" W, 6 1/2" L. Satin deep-etched aluminum panel, grey wrinkle steel case.

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NEW ENGLAND DIVISION

CONNECTICUT—SCM, Victor L. Crawford, WITYQ
—KJAD made BPL. Fifty-six Connecticut hams at-
tended the Seventh Annual Get-together at Waverly Inn.
NJM, BDI and EFW gave talks. YBH received a plaque
for outstanding work and participation in the Deep Sea
Dragnet. UCA has a new jr. operator. OBR received the
IRN Net certificate. YBH reports CFN handled 399 mes-
sages during 31 sessions, and had an average daily at-
tendance of 30 stations. High QNI goes to KIAQE, 31;
KIBEN, KICEC, DAV, TVU, YBH, 30; VQH, 29;
VOV, 28. New officers of the Waterbury ARC are HJG,
pres.; PHT, vice-pres.; ANE, secy.; GTE, treas.; ILV,
act. mgr. DDE has 2- and 6-meter Gonsets. FHP has
a new tower and 44-element 2-meter beam. EQC pur-
chased a 6N2. KYQ advises CN handled 450 messages,
including 71 on the second session during 31 sessions for
an average of 14.5 per session. Average daily attendance
was 11 stations. High QNI goes to OBR, KIDHU,
KJAD and RFJ. KIAQE received the W-Conn award
at a recent Torrington Jaycees meeting. URM is on s.b.h.
NQL and WRO joined MARS. IOW, ex-3AD0, is on
from Norwich. EXO has a new DX-100. OPB has a
new SX-101. ECH has added WAVE and WBE awards.
KIAQE has increased power to 500 watts. KJHR is using
a 6146 on 6 meters. A KX6 brought KICC to 32 coun-
tries. KICKZ passed the commercial phone test. CHR
worked a ZC4. HYF has a new 328-1. KNJTV is active
from Mitchell College. KNIKEA is a new Novice in
Torrington. FHP advises CVN handled 31 messages dur-
ing 13 sessions with 156 total stations checking in. High
QNI goes to ZUQ, 13; KIBMM, KIBML, FHP, JZA,
12; HJG, KADY, 10; AMJ, 8. KIBMM and KIBML,
father and son, have a new Ranger. GNS has remodeled
his shack. FOR is putting up a new 220-Mc. antenna.
ZIG is on 220 Mc. using a 6360. KIHMM is getting set up
for TV. KLK is building 432-Mc. equipment. KIHA has
a new Viking II. KNJVS is a new Novice in Meriden.
New appointments: KIHMM as OO, CSX as EC, CHR
and ROX as ORSS, KIAZG and KIHMM as OPSS. Ap-
pointments renewed: KYQ as RM, EOR as SEC;
KICKZ, FOR and YOL as OES; RAN as OO; AW,
KIBEN and KLK as OPSS; AW and KLK as OPSS;
WX as EC; AW and KYQ as ORSS. Reports received:
OO from KICKZ, MBX, VW; OES from KICKZ, FOM,
FOR, FVV, KIHMM, KLK, LGE and YOL. Traffic:
(Mar.) WIKYQ 380, AW 292, YBH 228, FHP/MDB 179,
OBR 153, TYQ 149, ROX 133, KJAD 127, WIEFW 116,
QJM 115, CHR 111, FHP 91, KIAAE 53, DIF 53, ACC
51, WIEYF 45, CUH 41, RFJ 41, KICEC 36, WIDBI 32,
KIAQE 31, CAK 25, WIHBB 22, KICLX 18, WIKLK
13, EJJ 11, KICKZ 10, WIFFP 8, KIBML 5, DDY 4,
WHJG 4, LV 3, TUW/13, ECH 2, HYF 2, JZA 2, YOL
2, KIBMM 1. (Feb.) WIDHP/MDB 234.

MAINE—Acting SCM, Charles F. Lander, W1QJA—
SEC, QJA, PAM; VLF, PAM; JML, RM; EFR
Traffic nets: 7:45 P. M. Mon. to Sat. 8:00 P. M. Mon.-
Sat. at 1700; the Pine Tree Net meets on 3596 kc. Mon.-
Fri. at 1900; the Barnyard Net meets on 3960 kc.
Mon.-Sat. at 0800. The 3rd Annual Hamfest will be held
at Augusta June 14 with the usual fine time and swell din-
ner at 12:30. There will be net meetings as follows: Sea
Gull at 9:30, Barnyard at 10:30 and RACES at 11:30.
Any of the boys in Augusta will take your reservation,
or you may write VXU, 131 Cony St. KNIJGTG, in
Saco, now has his General Class ticket. COP, of Scar-
boro, is now on 2 meters. Please! Let's have reports from
the ECs. Some of you fellows seemed to have slipped
from circulation, so send reports to your SEC no matter
how slight they may be. Keep your AREC forms com-
ing, fellows, and we will try to get your membership
cards back to you promptly. It was gratifying to find
many organizations asking the aid of communication by
ham radio during the recent alert. Don't forget to send
your reports from the various areas on the alert, fellows.
How about getting those traffic reports in just a wee bit
earlier, gang, so that we may get them out in time?
Thanks in advance. Traffic: WIGPY 211, QJA 116, CEV
77, UDD 48, KIDEG 43, FCV 22, GAV 22, BYE 12,
W1QYT 11, KIBDDQ 5, BZE 7, W1BX 6, LXA 3.

EASTERN MASSACHUSETTS—SCM, Frank L.
Baker, jr., W1ALP. New appointments: SZV and KIMF
as OOs. Appointments endorsed: UR as PAM for the
2-meter band; SMO, FJJ, FRR and MIX as ORSS;
FRR, HIL and RP as OPSS; FHJ and SPL as OBSS;
NF as OO; SPL as Sector 1-C EC. TUP now is at Fort
Monmouth, N. J. Heard on 73 meters: SGH, AJZ, SON,
ZXC, UMC, DVB, RBN, EU, BAQ and KICM. KNIJBR
has a DX-40 and an NC-188. On 2 meters: FMW, LAE,
KLQ, KNIHVB, JTF, KIDRO, IDA, KIOE and
KNIJO. FVD is home from Arizona. BIO had a second
operation. We are glad to hear that TA is coming along
well. FI is still in the hospital. BGW has a new QTH.
EJY is working on a rig for 2300 Mc. NF worked K84BB.

(Continued on page 134)

For Hams who TRAVEL ... live in APARTMENTS

the New MOSLEY

Tote-Tenna for 10-15-20 works **GOOD** anywhere!

here's
why:

TOTE TENNA is a full electrical $\frac{1}{2}$ wave-length on each of the 3 bands and is voltage fed through a frequency-sensitive *tunable* L network. This makes it possible to tune out reactance and achieve near-unity match under almost every conceivable condition of installation. High in the air—or near the ground . . . TOTE TENNA will put your signal out!

Superb engineering and craftsmanship make the TOTE TENNA a perfect traveling companion to the finest in portable/mobile rigs. Rated to 300 watts (AM), TOTE TENNA is also ideal as a "fixed station" antenna for low and medium power operation.

TOTE TENNA radiator opens to 14' . . . packs into space just $4\frac{1}{2}$ " x 8" x 36". Truly portable! Sturdy window mount is quickly, easily installed without tools. Weather seal keeps out wind or rain so you can "ham" in comfort — anytime!

Radiator sections, of durable 61ST6 aluminum, are ingeniously connected by an interior spring and nylon cord arrangement that permits rapid and accurate assembly. No ground or radials are needed. You're on the air in minutes with TOTE TENNA!

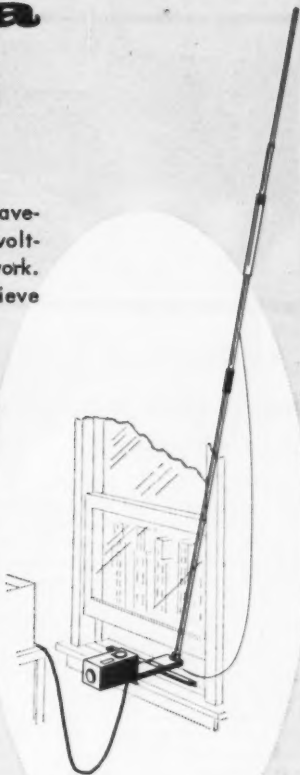
MODEL TT-31, TOTE TENNA with Tuning Unit, Coax Line & Window Mount. Amateur Net, \$80.00

MODEL TT-31-A, Deluxe Carrying Case.
Amateur Net, \$27.45

MODEL RI-6, *SWR Bridge. Amateur Net, \$47.65

MODEL TT-31-X, TOTE TENNA complete with all accessories listed above. Amateur Net, \$149.50

* (Because TOTE TENNA is designed to be tuned for peak performance in varying locations, this can best be accomplished by tuning for lowest SWR. The MOSLEY Model RI-6 is a superior quality instrument featuring a side indicator meter and intended for continuous service at power ratings from 10 watts to 1 Kw. For 52 ohm line.)



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That's right. If you want to *get going* in Ham Radio at the lowest cost with the finest equipment, the place to start is at Terminal. Here the newest equipment and the best values are always in stock and our own active, interested Hams are always on hand to help you.

Among new equipment and top values, this handsome new Hallicrafters S-107 receiver is a *best buy* for you... Broadcast plus 4 short-wave bands, including 6 meters, cover 540 KC-54.5 MC. Plug-in jack for your record player! Separate electrical bandspread with 0-100 logging scale plus calibration for the 6 meter band. Also boasts Receive-Standby switch; AM/CW switch; sensitivity control; noise limiter switch; 2 position tone switch; 5-position band selector switch; 5" PM speaker; jack for earphones; speaker-phones switch; terminals for doublet or single wire antenna. Audio output one watt. UL approved. Seven tubes plus rectifier: 6C4, 6BA6, 2-6BA6, 6H6, 6SC7, 6K6GT, 5Y3GT. Modern, streamlined gray hammertone steel cabinet with brushed chrome trim. 13 1/2" wide, 7" high, 8 3/4" deep. Shpg. Wt. approx. 18 1/2 lbs.

Talk to Terminal. Talk to Terminal about the S-107 and entire Hallicrafters line. Talk to Terminal about our unusual buys for all your Ham equipment. "You can always depend on Terminal for your best deal"... 73.

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134

UIR has a 50th year QSL card. MME gave a talk at the Braintree Club. The South Shore Club met. TZ, LIY and KIBRE have been working KLTs AIR, CKQ, FBC, FAK, BWK and SPN on phone. KIBBU has s.s.b. going. KIBUR made a flying trip to W6-Land. MD is on 10-meter c.w. YOR moved to Rochester. N. Y. JOT has 10-meter s.s.b. BIY and ZXG are mobile. AWA, KIADH and CMS made BPL. UKO is going into the Lemuel Shattuck Hospital, Jamaica Plain, for about a year. NJL has a IIRN certificate as EMN representative and EAN liaison. KIDIO is working on a 220-Mc. rig. UIR says our 2-meter net has about 80 stations on the list with five on the Cape coming in. KIAH had his first QSO on 220 Mc. with YQH. KNIHBY is active on 2- and 80-meter c.w. WU lost his Zepp in a storm. ZSD is very active. KIEBH is active in Chatham. KIEKE is moving to L. I., N. Y. New officers of the Hingham Club are KIBUR, pres.; KIBBU, vice-pres.; GRX, secy.-treas. The Chelmsford Club will have an auction and banquet. The Framingham Club had ICP, of ARRL, give a talk. RCJ showed slides about the club, which meets the 2nd and 4th Thurs. at the Civic League on Concord St. The ORA had Dr. Scott, of N.U., speak on "Transistors." OFK is asst. net manager for the EM2N. KNI GTX is going on 6 meters. LMZ has a Gonset on 6 meters. ALGQZ is back on 2 meters. OFK is trying out MUD's converter. KNIJXY is KIGGW's brother. YVV has moved to Uica, N. Y. IPE is very busy at work. LN is calling a meeting of all Danvers hams to improve things for their net. WJZ has a new son. RP is on 75-meter phone. The T-9 Club held its annual meeting at the Commodore in Beverly. MX soon will have rigs on many bands. KTJ spoke on mobile rigs at the North Shore Club. CUW has s.s.b. with his Gonset transmitter. UKR, net manager of the Deep Sea Dragnet, presented YBH with a special plaque for his long service. PU made the speech and ZTW/PR also gave a talk. KNIJLJZ is on 40 meters with an SX-99 and Lettine 240. KNIJPB has an SX-99 on 40- and 80-meter c.w. NJ is waiting to get his call and license back. The Sector 2-D Net is now on 147.325 kc. and has a new Gonset 3 and a linear amplifier. OKI is building an 813 rig. BB is studying 160-meter DX propagation and has 1-kw. rig at his Maine QTH. PI is living in Newton with his daughter. UKO went into the hospital Apr. 6. Traffic: (Mar.) WIWA 534, ECT 296, ENIG 288, KIGP 350, ADH 234, WIUKO 218, KICMS 210, WINJL 194, QPU 173, KIBYL 149, WIEAE 139, KIDIO 133, WIOFK 131, KIDGI 104, WILMZ 104, HGN 93, KIBCL 84, WIUIR 50, ZSS 46, KIGYM 40, WIKYC 37, LGO 24, MIX 23, TY 22, AOG 17, KIAH 14, WIAKN 14, QFO 14, KIBUF 12, WIBEI 11, ATX 10, SIV 10, UE 10, KNIHBY 9, KIJML 9, EAV 7, WIDOM 6, GEK 6, WAW 6, WU 5, BB 4, HWE 4, KJZS 4, WHER 4, RCQ 4, TQJ 4, AHP 2, ALP 1. (Feb.) WIMIX 33, AOG 17, WAJ 1.

WESTERN MASSACHUSETTS—SCM, John F. Lindholm, WIDGL—Asst. SCM: Richard J. Kalnager, IKGJ, SEC: BYH, RM: BVR, PAM: MNG. The West Mass. C.W. Net meets on 3560 kc. at 1900 EST Mon. through Sat. The Mass. Phone Net meets daily on 3870 kc. at 1800 EST. The West Mass. Novice and Slow Speed Net meets Tue., Thurs. and Sat. on 3744 kc. at 1830 EST. BVR reports that we are getting a few good traffic men on the Novice Net; however, more check-ins are welcome. New Novices, please note. New appointees are NMQ as OFS, DUP as OO and KICAU as ORS. All stations interested in an official appointment are invited to contact the SCM. DGT scraped up some new countries in the DX Contest. KNIJU and KNIJUV, of Springfield, have passed the General Class exam. AJX has built a Heath Grid-Dip Meter. ZPB is hot on the trail of WAS. KICSW is working on a 150-watt home-brew rig. The Massachusetts Amateur Radio Club conducted its first hidden transmitter hunt; the 30-watt 6-meter rig, operated by BYH, DGL and KGJ, was found first by FOX and MDS. Additional hunts are planned for the future. Western Massachusetts should be well represented in this year's Field Day, according to reports received by our SCM. KIJHC and KIJGZ, of Leominster, are now General Class. AZW and WF picked up some new ones in the DX Contest. *Random Scatter*, of the BCARA, carried an excellent editorial on Novices. Might I add that the WMNN, see above, is an excellent activity in which the Novice may participate. Encouragement by other amateurs to participate in such activities would benefit the Novice. I'm sure. Traffic: WIDGL 260, KICAU 215, WIBVR 163, KGJ 35, DXS 33, DZV 33, KICSW 13, WIAGM 11, DUP 9, KNIJU 8, WIAJX 7, OSK 3.

NEW HAMPSHIRE—SCM, Robert H. Wright, WIRMH—SEC: BXU, RMs: KIBCS and KICIF, PAM: IIQ, V.H.F. PAM: TA. The NHN (c.w. net, 3685 kc.) would like more stations to check in from the main cities

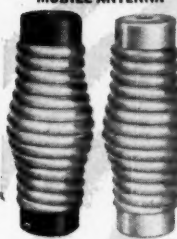
(Continued on page 136)

HEAVY DUTY MOBILE BASE MOUNTS



MMW-3AE MMW-3AP
Ebony Finish \$6.95 Polished Finish \$7.95
Ebony Finish, S. S. Hardware \$8.95
Polished Finish, S. S. Hardware \$9.25

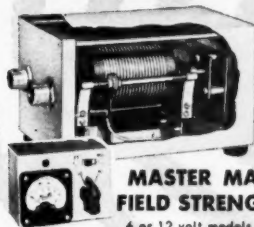
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plated - Ex Protection
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FIELD STRENGTH METER**
6 or 12 volt models \$24.95

Automatically
tunes the
entire band
from the
drivers seat!

FIBRE-GLAS WHIPS

The Feather-Weight Antenna with Spring-Steel Strength!
The completely weather-proof, breakproof antenna with special flexibility that prevents accidental shorting-out against overhead obstructions which sometimes cause loss of signal or serious damage to your equipment.

FG-60 60" .. \$4.95
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NEW MULTI-BAND ANTENNA COILS

New Plug-In type coils for the Ham, designed to operate with a standard 3' base section and standard 5' whip



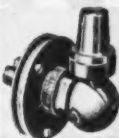
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10-15-20-40-75 METERS 10-15-20 METERS

- Rigidly tested & engineered—found to have "Q" of 525
- Handles 500 Watts input
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- Positive contact—noise-free, trouble-free operation
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- Factory pre-tuned—no adjustments needed

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**Leaders in the
Design and Manufacturing of
Mobile Communication
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No. 321
**BODY
MOUNT**
\$7.95



MASTER-MAGIC WAND

New easy-to-install, single band, top-loaded plastic covered fiber glass mobile antenna provides maximum performance at the most useful radiation frequencies.

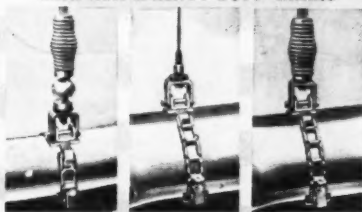
10 Met-5 Ft. L. \$12.95
15 Met-5 Ft. L. 12.95
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40 Met-6 Ft. L. 14.95
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NEW CITIZENS BAND
27.255mc ... \$12.95

SUPER HY-GAIN CITIZEN BAND

Citizen band mobile stacked coaxial antenna provides 5 to 6 DB gain. 42" high from ground plane. Furn. with 12" extension for bumper mount.

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BUMPER MOUNTS WITH NEW X-HEAVY DUTY CHAINS



No. 444 \$17.80 No. 445 \$7.95 No. 446 \$13.45
Adjustable to any bumper. No holes to drill, easy to attach. High-polished Chrome Plated 3/8"-24 thread, to fit all antennas. Precision engineered.

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**AT LEADING
RADIO JOBBERS
EVERYWHERE**

*For a tower
of STRENGTH*

**BUY FAMOUS
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- Withstands 80 mph gales without ugly, hazardous guy wires
- Free standing to 50 feet high
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RADIO SUPPLY COMPANY, INC.

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All with TELETYPE CONNECTION to MAIN STORE
BETTER STILL, COME IN — PLENTY OF PARKING SPACE

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in the State. Vandals recently broke into the Manchester Radio Club's club house on Mt. Uncanoonuc and caused \$400 damage to equipment. The Manchester Emergency Net is active Fri. at 1900 on 29 Mc. New ECs are ZFP, Merrimack County; HZN, Belknap County; RKA, Coos County; MUJ, Carroll County; QXP Rockingham County; MCS, Grafton County; and KIBJD, Sullivan County. WBM is c.d. director of Dover. MOI was chosen Army MARS operator of the month for February. Welcome to new hams KN1JY, of Contoosook, and KN1KCD, of Concord. DUB has a 4X150 going on 432 Mc. MDP and RMH attended the first New England RSTV get-together at Boston Mar. 21. GSPN certificates go to MEV, GIB, KIDFM and KIHMG and an NHN certificate to EVN. Appointment: KICIF as RM. Endorsements: VBX as OO Class I, VAU as OO Class IV. KIHMG is holder of GSPN achievement award certificate No. 1. FTZ reports Army MARS activity in New Hampshire increasing with 32 members. Let's all make June 27-28, the biggest ARRL Field Day yet. Traffic: (Mar.) KICIF 903, BCS 831, KN1HK 115, W1YHF 64, KIBOO 41, W1EVN 31, RMH 25, K1C5J 24, DKD 12, W1BYS 9, JFJ 8, CUE 5. (Feb.) W1HKA 190, K1AHE 74, W1BYS 4, VBX 2.

RHODE ISLAND—SCM, Mrs. June R. Burkett, W1VXC—SEC: PAZ, PAMs: KCS and Y1RC, RM: BBN. Endorsements: YRC as PAM and LSP as OPS. The members of the Associated Radio Amateurs of Southern New England (ARASNE) have voted to sponsor a certificate award. This WRI award is to be issued to stations having confirming contacts with two stations in each of the five Rhode Island counties. Only contacts made on or after Jan. 1, 1959, will be considered. An applicant may submit confirmations of all c.w. and all phone contacts. QSLs should be sent with a self-addressed envelope to W1KUQ, secy., ARASNE, 54 Kelly Ave., Rumford 16, R. I. UHE worked OLO and K1EBC on 432 Mc. with excellent results. BBN participated in the c.w. portion of the DX Contest and worked 3 new countries. K1ABR is back on the air after rebuilding the shack. PPN and K1HZE have each built electronics keys. OMC is now a member of MARS. Welcome to new General Class K1KER of East Providence. SMU made BPL again this month. Traffic: W1SMU 490, VBR 121, BBN 83, TXL 54, LSP 24, YRC 14, K1HZE 10, W1DDDD 7, WED 7, OMC 6.

VERMONT—SCM, Harry A. Preston, jr., W1VSA—SEC: EIB, RM: K1BGC, PAM: ZYZ, Asst. PAM: K1GLO. Frequencies used in Vermont: Cw. 3520, phone 3855 kc.; VTN, Mon., Sat. at 1830 (c.w.); VTEN, Sun. at 0900 (phone); GMY, Mon.-Sat. at 1700 (phone); VTEN, Sun. at 1700 (phone). KN1ITM is the brother of K1HKI of South Barre. As reported in the April issue under traffic the credit of K1DQB actually belongs to K1BQB. Sorry. EIB hopes to have quad antennas up by May. EXZ, of Danville, worked K1CXX directly on other side of 6200-ft. Mt. Washington over what may be one of the best obstacle gain paths in New England. When in Morrisville, Vt., stop at K1G's and see a neat looking station. The International Field Day at Mallets Bay, Vt., will be held the second week end of August. The BARC, Inc., and the Middlebury Mike and Key Club are planning for Field Day. K1AUE is running a half gallon with an excellent signal. Visiting amateurs to Vermont will find the following frequencies monitored: 3855 kc., 145.8 Mc. in the Burlington Area. HRG has gone high power, 5000 watts to be exact but well within legal limits. His frequency is 60 cycles at 110 volts. Civil defense has a training net on Sat. at 1330 on 3993 kc. Traffic: (Mar.) W1OAK 231, K1BGC 40, BQB 30, W1EIB 24, ELJ 23, FPS 22, UWS 20, K1GFB 17, W1VSA 17, K1G 15, LMI 14, K1DQB 13, HKI 9, BOL 3, W1ZJL 3. (Feb.) K1BGC 36, DQB 11, AUE 4.

NORTHWESTERN DIVISION

IDAHO—SCM, Mrs. Helen M. Maillet, W7GGV. County c.d. directors and RACES coordinators in District 6 met in Rigby with State Radio Officer OCR to discuss c.d. communications set-up. March winds took VQC's antenna down. He's replacing with a vertical. Since his appointment as OO, interference is practically nil in the Moscow Area. High school stations K7DAX, Postello, and JFA/7, Driggs, are seeking other high school contacts. JFA and DUP are doing fine jobs instructing prospective hams. DWE's antenna fell down and he blew up his transmitter trying to load it. DHL's transmitter blew up also. DUP got a scholarship to study in Corvallis Ore., next year. K7DUX has a new daughter. Idaho Radio Amateurs, Inc., set up plans for the C.D. Alert. Madison County was first in Eastern Idaho to have a station in the Court House for c.d. purposes. DWE is County Coordinator. W7R has an s.s.b. rig on the air. Traffic: (Mar.) W7HSV 33, WEY 33, BUY 23, VQC 20.

(Continued on page 138)

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TRANSCIVER

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2-WAY RADIO for everyone!



MEETS ALL FCC REQUIREMENTS

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CITIZEN BAND

CHECK THESE **ADDED** FEATURES!

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- ✓ BUILT-IN Squelch
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CUSTOM, 117V AC, all channel receiver\$94.95
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Ideal for office-to-field communication. Also for office to trucks operating within restricted area or for office and factory liaison.

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The solution to fast communication from the farm home to the field. Wonderful in an emergency.

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From ship-to-shore or from base camp to the scene of the hunt... an enjoyable accessory to any sport!

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Please send me my copy of your free brochure on the Transceiver. Also your new 1959 Catalog.

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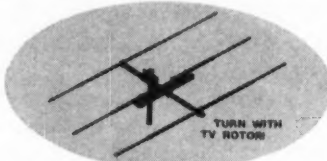
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NEW!

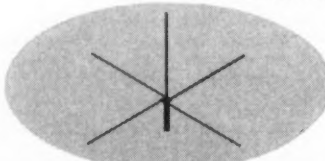
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27 mc. Antennas
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Rugged . . . Durable!
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**MODEL A-311, Three Element Beam for
best point-to-point communication.
9.3 db gain over reference dipole.**
Net Price \$37.50



**MODEL V-27-GP, Ground Plane Vertical
for effective communication with mobiles.**
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MONTANA—SCM, Vernon L. Phillips, WNPV/WXI
—The MPN meets M-W-F at 1800 on 3910 kc. MSS meets T-T-S at 1900 on 3530 kc. IVD joined Silent Keys Mar. 30. Don suffered a heart attack while working in Glacier Park. YCQ has a new jr. operator. LOD moved from Bozeman to the Page Rest Home in Three Forks. YHB and YHC moved from Harlowton to Billings. YHS made BPL, K7CWA, K7CWB and K7CWF are new Conditionals at Wolf Point. K7DES is a new Conditional at Great Falls. New officers of the Old Faithful Radio Club are Bill Zinner, pres.; K7CHA, vice-pres.; RZY, secy.-treas.; ZOH, act. mgr.; and K7CZQ, pub. chmn. EEO built a transistorized mobile converter. RZY and K7CHA have a new Viking Valiant. HJM and ZJZ vacationed in Arizona. The Central Montana Hamfest will be held in Lewistown June 6 and 7. The Malta Ham Picnic will be held June 21 (JXM, secretary). The Silver Jubilee of the Glacier-Waterton International Peace Park Hamfest will be held at Appar July 18 and 19. Traffic: W7YHS 182, K7AEZ 107, EWZ 81, BYC 27, W7SEK 27, K7DVZ 14, W7TPE 11, EWR 8, NPV 8, OIP 6, K7CFA 4, W7YQZ 4, MQI 3, TGM 2.

OREGON—SCM, Hubert R. McNally, W7JDX—The OSN is going great again but AJN, the RM, still is seeking more c.w. operators to fill out the net. BRATS for March were AJN, BVH, ZFH and ZB. The Ashland Radio Club's Dish Dinner held Apr. 4 was a swell affair. Sorry the SCM could not make it. GLZ is very active with the Columbia River V.H.F. Club, also with the Sea Scouts. EZH, new Clatsop County EC, sends in a nice report on AREC activity. The new SEC, UQI, has things pretty well in hand now that he has reports from almost all ECs. Plans are being made for an AREC net on 3875 kc. in Oregon and Red is busy working out the details. All AREC members are welcome to check in on the new net. GLZ is a new OSN and will be on 50 Mc. NJS, the PAM for Oregon, also is helping out with the new AREC net along with her many other duties. GWB, the EC for v.h.f. in Multnomah County, reports plenty of activity on 6 meters with an AREC net each Thurs. night. Looks like DEM and JDX will have to chase those chinook salmon in the Rogue River again this spring. DIC was in Portland for one of the Portland Roses meetings. LT still is busy on MARS. ZB still is breaking traffic records. JDX and UQI are looking forward to seeing all the gang at the Roseburg Convention. Traffic: W7ZB 503, BDU 477, K7CLL 177, W7ZFH 82, RVN 51, BVH 45, LT 42, AJN 32, MW 19, GLZ 14, OMO 14, GAJ 12, GNC 11, DIC 8, DEM 7.

WASHINGTON—SCM, Robert B. Thurston, W7PGY
—SEC: PQT, RM: AIB, PAMS: LFA and PGY. Washington nets: WSN, 3535 kc. 1900 PST Mon. through Fri.; WARTS, 3970 kc. 1800 PST Mon. through Sat.; NSN, 3700 kc. 2100 PST Mon. through Sat.; the QCWA Net 3850 kc. 1600 PST Sun. New officers of the West Seattle Amateur Radio Club are TWU, pres.; CWX, vice-pres.; PN, secy.-treas.; LCS, historian and program chairman. RGL transmits Official Bulletins on 3610 kc. at 1830 PST Mon., Wed. and Fri. KN7GCK is chasing DX on 15 meters with a Viking Ranger and an HQ-110. New Generals in the Tacoma Area are K7s GPJ and GPG. The Radio Club of Tacoma holds code classes for one hour each meeting night. BSW reenlisted in the Army. The Tacoma Annual Banquet was held Mar. 7 with 47 present. A new net is being proposed for teen-agers on 3810 kc. at 1900 PST Wed. through Sun. The Skagit Radio Club Banquet was held at Mount Vernon with 110 present. JWE is chasing DX on 20 meters. UWT received the WAS and WAWC awards. IEU is using a new electronic keyer on NSN. WAH is having antenna troubles. AIB reports net attendance very high on WSN. K7GXQ moved to W6-Land. The Northwest Chapter of the QCWA's Semi-Annual Dinner Meeting will be held in Yakima June 13/14. New ORSs are DPW and KZ; a new OO in the Spokane Area is OBH. The following renewed appointments: YFO as OO, JC as ORS. DZX is chasing parasites in the 75-meter band. QLH is building a new shack. DPW is working full break-in now. AMC is complaining of blackouts on the band and thinks maybe he will use smoke signals. EKT acquired a 32V-3. GSP is attending U. of W. EVU sends in a good OO report. CEV, of Spokane, won the 20-meter beam at the Skagit Banquet. LFA is putting up a tri-band quad. QLH is the new manager of RN7. The Spokane AREC assisted in the search for a missing child. K7ASY is active on 6 meters. All appointees are requested to check the expiration date on their certificates. OEX holds skeds with 9HJM/mm for traffic. JPH is working on the new power supply for the new final. The Washington Amateur Radio Traffic Net will hold its Annual Picnic and Hamfest at Cougar Inn on Lake Wenatchee the second week end of July. Contact QGP for further information. UVI is back in Monroe from KH6-Land. Most of the Washington gang are QRL on preparations for Field Day.

(Continued on page 140)

NOW IN FULL PRODUCTION!

THE REVOLUTIONARY NEW CENTRAL ELECTRONICS 100V EXCITER-TRANSMITTER

**BROADBANDED! ONLY
ONE TUNING CONTROL,
THE VFO ITSELF.**



CENTRAL ELECTRONICS, THE PIONEER OF AMATEUR SSB IS PROUD TO BRING YOU THE FINAL RESULT OF THREE YEARS OF THE KIND OF PATIENT ENGINEERING, TESTING AND IMPROVING THAT MAKES FOR A SUPERIOR PIECE OF ELECTRONIC GEAR.

MANY OF THE TRIED AND TRUE PRINCIPLES AND FEATURES OF THE ORIGINAL MULTIPHASE EXCITERS HAVE BEEN RETAINED IN THE NEW 100V, ALTHOUGH IN VASTLY IMPROVED FORM. THE USE OF PATENTED BROADBAND CIRCUITRY THROUGHOUT PRACTICALLY ELIMINATES "COCK-PI" TROUBLE.

REGARDLESS OF YOUR PREFERRED MODE OF OPERATION, IT'S ALL IN THE 100V. SSB, DSB, AM, PM, CW and FSK . . . AND ALL AT THE FLIP OF ONE SWITCH. ALTHOUGH THE 100V WILL PROBABLY FIND ITS GREATEST USE AS A SINGLE SIDEBAND SUPPRESSED CARRIER EXCITER-TRANSMITTER . . . NO ONE HAS BEEN "LEFT OUT IN THE COLD" IN ITS DESIGN. THIS IS THE KIND OF A RIG THAT HAMS DREAM ABOUT!

CHECK AND COMPARE THESE FEATURES

STABILITY: The new patented two tube permeability tuned VFO circuit is exceedingly stable and is immune to the effects of line voltage fluctuations and tube ageing. Built like a battle ship, it is tuned by a husky precision lead screw assembly running in ball bearings. This is a VFO to end all VFO's.

FREQUENCY COVERAGE: 80 METERS — 3.3 to 4.5 Mc. 40 METERS — 6.5 to 7.5 Mc. 20 METERS — 13.3 to 14.5 Mc. 15 METERS — 20.5 to 21.5 Mc. 10 METERS — 27.7 to 29.7 Mc. A spare X position provides for the installation of broad-band coils for 160 meters, MARS, etc. OR any 1 Mc. portion of the spectrum between 1.5 Mc. and 25.5 Mc. OR any 2 Mc. portion of the spectrum between 25.5 Mc. and 29.7 Mc. YOU DON'T SETTLE FOR HALF A LOAF OF FREQUENCY COVERAGE WHEN YOU HAVE A 100V!

THE TUNING DIAL: Band scales in the large slide rule window change with the band switch and are calibrated at each 100 KC point. Frequency is read directly in 1 KC increments by the circular KC dial without any computation whatever. Approx. 12 feet of bandspread on each band. A smooth running two-speed tuning knob allows fast tuning at 100 KC per turn and slow tuning at 750 CYCLES per turn. Calibration accuracy is 250 cycles between any two 50 KC points.

METERING: Reads POWER INPUT (0-200 watts) RF AMPS OUTPUT, AC LINE VOLTAGE and CARRIER SUPPRESSION IN DB DOWN TO 70 DB.

MONITORING: A 2" scope provides an instantaneous visual check on non-linearity resulting from improper loading. Also indicates proper setting of carrier injection for 100% AM modulation. Scope presents trapezoid pattern.

OTHER INDICATORS: Below the meter a neon indicator provides a check on the operation of the NEW AUDIO LIMITER CIRCUIT. Below the scope a second neon indicator starts operating if you have the antenna or load mis-matched.

NEW AUDIO FILTER-LIMITER: The new filter is composed entirely of R-C components, yet has the steep side response and rejection characteristics of a four toroid tuned filter but without the usual harsh, ringing effects. Bandpass is 200 to 3700 cycles. This filter precedes the phase shift system and will maintain 50 DB SUPPRESSION OF THE UNWANTED SIDEBAND. The new audio limiter maintains audio drive to the balanced modulator WITHIN 1 DB, REGARDLESS OF HOW HARD THE MIKE IS HIT. IT'S IMPOSSIBLE TO OVER-DRIVE THE 100V BALANCED MODULATOR! Inverse feedback circuits allow 10 DB OF CLIPPING with negligible distortion.

NEW PS-2 AUDIO PHASE SHIFT NETWORK: A twelve cross-over point network is composed of heat-cycled components having .1% accuracy. Even changing the balanced modulator tubes has no effect on its maintaining 50 DB OR BETTER suppression!

POWER OUTPUT: The husky, ultra-linear type 6550 tubes in the final of the 100V will deliver 100 WATTS OF SINGLE TONE POWER, EVEN ON TEN METERS! AND WITHOUT GRID CURRENT FLOW. Two tone third order distortion products are down in excess of 40 DB. A new POWER OUTPUT CONTROL eliminates the need for power dividers when driving AB1 or AB2 linears, since power output is continuously variable from 10 watts to full output.

SET AND FORGET CONTROLS: These seldom used controls are all located behind the flip down magnetic doors on the front.

GENERAL CIRCUITRY: Crystal controlled master SSB generation is at 8 MC. VFO injection is 3 to 6 MC. Crystal controlled heterodyne oscillators operate into mixer stages for various bands. This system, originally developed by C. E. is today the standard of the industry. Blocked grid keying of mixers and final amplifier provides perfect CW and PHONE BREAK-IN.

PHYSICAL DATA: Panel is standard 19" width by 8 3/4" high. Finish is smooth grey. Attractive heavy duty rounded corner cabinet is 15" deep, is finished in grey wrinkle and has a latch type access lid. Shipping weight approx. 90 lbs.

MULTIPHASE 100V complete..... Amateur net..... \$395.00
Easily removed from the cabinet for rack mounting.

COMING UP! MORE SUPERIOR GEAR FROM C. E. THE SSB PIONEER

A NEW COMPANION RECEIVER: Which will TRANSCIBE THE 100V or separate the two VFO's at the flip of a switch. The 100V has the interlock control sockets built in.

A NEW 2500L BROADBAND LINEAR AMPLIFIER. Big brother to the famous 600L.

A NEW HETERODYNE CONVERTER: To cover all of the 2 and 6 meter bands with the 100V. Interlock control sockets are in the 100V.

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A Word from Ward . . .



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In every line of enterprise one name stands out as tops. In sports cars it's the Mercedes SLR. In violins it's Stradivarius. In electronic computers it's Univac. And in the field of Ham antennas—it's Hy-Gain.

In every case where one name achieved superiority, that name carried the day because the product behind it delivered the goods.

And exactly what does the Hy-Gain Antenna deliver? That's easy. Performance!

Want an antenna for 3/4 meters, 1 1/4 meters, 2, 6, 10, 15 or 20 meters? Hy-Gain's got it. Want a dipole job, a three-element beauty, or a whole slew of multi-band verticals? Hy-Gain's got it. Like an antenna you can put up—even if you haven't got a degree from the Massachusetts Institute of Technology? Hy-Gain's got it. Want the same antenna which one amateur (Lt. Col. Lloyd D. Colvin, W6KG) used in contacting 331 different prefixes located in 141 different countries? Hy-Gain's got it!

Now, with Summer coming up and time coming around to get your signal out, just remember this whenever you think of antennas:

Hy-Gain's got it—and Adirondack sells it. Period.

Ward J. Hinkle
WJH

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call or drop in to see WARD, W2FEU

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Ward J. Hinkle, Owner

RMI is building a 6-meter converter and is going to rewire the DX-100 for 6 meters. VARC had an amateur radio exhibit at the local hobby show. Traffic: (Mar.) W7BA 2013, PGY 809, QJH 444, DPW 402, DZX 386, APS 149, HUT 73, AMC 70, IEU 66, K7ETP 33, WOEB 32, K7ABB 29, W7AIB 23, KZ 20, UWT 19, WQD 16, K7CHP 14, W7EKT 12, WAH 12, LFA 10, EKQ 8, REC 8, EVW 6, YFO 6, SYE 5, CZY 4, JWE 4, JC 3.

PACIFIC DIVISION

A Pacific Division ARRL Bulletin is now transmitted by W6ZF, W6RNC and K6YBV. W6ZF, Sacramento, uses 3540 kc. c.w. tape transmission the 2nd and 4th Monday of each month 8 P.M., PST. W6RNC of Berkeley also sends taped bulletins at the same time every 2nd and 4th Wednesday. K6YBV's is voice transmission.

NEVADA—SCM, Charles A. Rhines, W7VIU—HWL, VJR, ZHW, K7AGZ and CMI all have new Molesky TA33 beams. K7CMI worked KC6CG and got Harold's club to donate some playing cards for use on Uitchi Atoll. SDE has formed the Army MARS V.H.F. net on 2 meters. The roster includes CX, PC, CZZ, MAH, HWL, OPY, EEF, ZHW, K7ANK, BJB, BIZ, FEP and AGZ. They have a 2-meter repeater under construction. Boulder City now has 15 AREC members with K7BVX as a new Asst. EC. V.h.f. man K6BPW has moved to Las Vegas. HOP is the new EC for Humboldt Co. VIU got his BERTA and Lads 'n' Lassies awards. He also made BPL. IWT has his CP-20 award. K7GQL and GQM, Donna and Don Wiley, are on the air from Owyhee with a Globe Champ and an SX-101. There are now 40 AREC members in Nevada. Your SCM attended the Pacific Division Staff Meeting in Oakland. The Nevada State Net still is going and can use more of you. Traffic: W7VIU 404, IWT 16, JCY 1.

SANTA CLARA VALLEY—SCM, W. Conley Smith, K6DYX—Asst. SCM, Frank J. Pacier, W6VMY, SEC: W6NVO, PAM: W6ZLO, RMs: K6EWY and W6PLG. The North Peninsula ARC meets monthly in So. San Francisco. Contact W6QIE for details. The Santa Cruz RC is applying for ARRL affiliation. W6GHH demonstrated his electronic typewriter, code-sending, 121-tube monster for the Foothills ARS. The San Mateo RC pronounces the best hamfest yet on June 7. New AREC members include K6IMI and W6DFL. Code practice tapes are available for use with an ordinary tape recorder from W6OWP or his XYL, W6SXG. K6VQK vacationed in Arizona during April. K6OSX has a new Viking 500. W6CLT is building a modulation monitor scope. W6ASH reports 14 countries on 80-meter c.w. one night during the DX Contest. Also W6RFF and W6RSY report good DX on 80-meter c.w. W6GQ now is operating on 2 meters. W6MXO, W6ZXS and K6DYX now have regular skeds with Hawaii. Late APO traffic can still make the MARS nets through Hawaii the same night. K6GID is enjoying the new RTTY set-up. K6GZ is going to get his RTTY traffic net going yet. Bee-keeper K6GPN makes one hobby pay for another. All his gear was paid for by the busy little stingers. Through this column your SCM tries to pass on bits of information and news of casual or general interest to fellow amateurs. Whether you hold an appointment or not your SCM would like to hear from you. If you think you can qualify for an official appointment, get in touch with any of the fellows listed at the head. Traffic: (Mar.) K6DYX 615, K6GZ 381, W6RSY 146, W6LKV 128, W6YBV 116, K6GID 86, W6ZLO 84, W6ASH 72, W6FON 60, W6DEF 43, W6QMO 42, W6OHI 36, W6BMP 24, K6OSX 21, W6YE 19, W6CLT 8, W6RFF 7, W6GQ 1. (Feb.) W6ASH 58.

EAST BAY—SCM, B. W. Southwell, W6OJW—Asst. SCM: Mary Gwynne, W6PIR, SEC: W6CAN, ECs: W6LGW, W6ZFZ, W6IUZ, K6EDN, K6JNW and K6QZG. W6BMW is working for V.O.A. at Dixon. K6GK is busy with traffic. K6DMW is on RTTY with 210 watts, 300 watts c.w. and s.s.b. W6IDY gathered 193,148 points in the C.W. DX Test. K6QHC still is in Navy Boot Camp and had a bout with bronchial pneumonia. New Novices in Berkeley are W6DVC and W6EBY. Ex-W6HMB finally passed his FCC General Class exam and is awaiting his new call with a Heathkit Apache, a Mohawk and a tri-band vertical. W6OJW got his Extra Class license. New AREC members in the Hayward Area are K6BDG, K6AUR, K6AHW, W6BRD, W6AHH, K6HDG, K6SCP, K6HSL, K6LWA, K6YSS, K6TYX, K6ONK, K6AMA and K6VXX—a bonanza month. FB, EC K6JNW! The EARC toured KGO-TV Mar. 13. New officers of the SARO for 1959 are W6NQJ, pres.; W6LCG, vice-pres.; W6YO, secy.; W6FZC, treas.; W6SPA, comm. mgr. The CCRRC held its March meeting at the Marin Amateur Radio

(Continued on page 142)

10 db GAIN

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IN BOTH DIRECTIONS

STATIONMASTER

CAT. No. 201-509

BASE STATION ANTENNA

The STATIONMASTER consists of a number of collinear radiating elements fed inphase and encapsulated in a continuous weatherproof Fiberglass housing and is capable of withstanding winds in excess of 125 m.p.h. The antenna termination is a standard type N male connector protected with a neoprene housing.

CARMASTER

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COLLINEAR GAIN ANTENNA

The CARMaster is a new development in vehicular antennas. It consists of two half-wave and one quarter-wave radiating elements, excited inphase. Catalog No. 181-509 is designed for cowl mounting. Cat. No. 181-509A Antenna has a 10' support tube extension for bumper mounting.

ELECTRICAL SPECIFICATIONS

CAT. No. 201-509

Nominal input
impedance.....50 ohms
VSWR.....1.5:1
Bandwidth..... $\pm 0.5\%$
Maximum
power input.....150 watts
Omnidirectional
gain.....5.8 db
Internal feedline.....RG-8A/U
Frequency
range.....450-470 mc

CAT. No. 181-509

Nominal input
impedance.....50 ohms
VSWR.....1.5:1
Bandwidth..... $\pm 1.0\%$
Maximum
power input.....75 watts
Omnidirectional
gain.....4.2 db
Feedline.....10' of RG-58/U
Frequency range.....450-470 mc

**INCREASE YOUR RANGE BY 30%
YOUR COVERAGE AREA BY 75%
WITH THESE TWO ADVANCED DESIGN ANTENNAS**

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MARLBORO, NEW JERSEY



LEW BONN'S *Bonnafide Bargain* OF THE MONTH



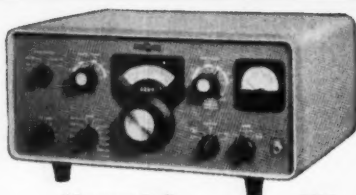
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SAVINGS on ALL your needs!**

"The Equipment
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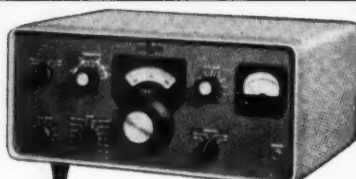
COLLINS

S LINE

305-1—(Not pictured) Linear Amplifier
\$1,470—10% down (\$147.00)



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325-1 TRANSMITTER **10% down (\$59.00)**



"Surpassing in Performance
... Simplified in Operation" **\$495**
75S-1 RECEIVER **10% down (\$49.50)**



312B-4
SPEAKER CONSOLE
\$185
10% down (\$18.50)



312B-3 SPEAKER
\$27.50
10% down (\$2.75)

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Club, W6CXP has a new drug store in Walnut Creek, probably selling tranquilizers to DX men! W6LW and his XYL spent 10 days touring Southern California. W6LKE is getting set for the ARRL Field Day. W6AIL is on 20-meter c.w. with one gallon. K6DQL is QRL house-remodeling. W6OJW is building a 28-Mc. rig for mobile. W6FAR has a new Eico 90-watt c.w. rig. K6FKX is building an s.w.r. bridge. K6POU is taking day and night courses at Diablo Valley College and says it sure cuts into hamming. W6OHR is building a new p.a. amplifier. K6RRF and K6KYT are working on 200-Mc. gear. W6IT is building a new ham shack. W6TKY and W6SRO are studying for the General Class license. K6MFA, with Volkswagen 20-watt mobile, worked KL7BIN on 3995 kc. K6JPR made 1044 points in the RTTY Sweepstakes. W6CNW is on 40-meter c.w. K6DQM has a new s.w.r. bridge. The NCTA had a traffic breakfast at Red Coach Inn, Los Gatos. New members of the HARC are W6AWW, W6ACQP and K6WJM. K6TIY, K6QCS and W6CML are active on 28-Mc. phone. The XYLs of the HARC members held their March meeting in Castro Valley. There are vacancies in the East Bay section for all types of Communications Department appointments. A postal to the SCM will bring prompt information. Traffic: (Mar.) K6GK 710, K6DMW 97, W6JOH 78. (Feb.) K6OSO 85.

SAN FRANCISCO—SCM. Fred Laubscher, W6OPL—SEC: W6FEA. PAM: W6WJF. RM: W6QMO. Most clubs report much activity in preparation for the coming Field Day. AJF has built several successful parametric amplifiers. BAZ is planning to move to Marin County. GQA needs a new Observer certificate. K6BAQ is now most actively engaged as editor of the MARC paper, QSA—6. Uncle Leo, again K6BAQ, is planning the 25th Anniversary Edition in June 1959 of QSA—6. The Far West RC's Field Day location will be right on the Pacific Ocean at the south end of Humboldt Bay at Table Bluff Lighthouse (the furthest west Field Day location in the 48). W6YOM has been busy in the following nets: NCN, RN 6 and MARS. W6QY has been needing his SCM to send him his BPL cards. Sorry Joe. Hope the virus-pneumonia is gone and all is well again. GQY is as busy as anyone could be checking into RN 6, PAN, TCC and TXN and working like mad handling much traffic. Wish we had more workers like him in our section. The SFRC held its annual auction Mar. 25. There were many goodies and a wonderful time was shared by all. The Mission Trail Net will hold its Annual Roundup in the San Francisco section at Panther Meadows, Mt. Shasta on June 20-21. W6CVJ is coming along nicely after his operation. K6ALF is counting the minutes until June 13 when he will walk down the aisle with our beautiful Rae Buckley (daughter of Wally and Rose Buckley of GGC fame). All our best to both of you swell kids! K6DJC got his 50th state for WAS via c.w. by working his dad, W6BIP/7, mobile in Fallon, Nev. Mendocino County is actively engaged in organization of an efficient emergency plan which will take in e.d., Red Cross, etc. The Cathay Radio Club is planning operations for Field Day. K6ANP, EC for the City and County of San Francisco, has been serving his community as TVI Committee chairman and is doing one fine job too. Len's work as EC has been truly outstanding. The Golden Garbage Can has his 28A teletype working like a charm and copying everything that comes along. Nice going, Wally! Traffic: W6QY 568, W6YOM 155, W6GGC 24, W6BIP 16, W6LCF 15, W6OPL 15, W6BAQ 1.

SACRAMENTO VALLEY—SCM. Jon J. O'Brien, W6GDO—Asst. SCM: William Van de Kamp, W6CKV. SEC: W6SLR. RM: W6CMA. PAMs: W6ESZ, JDN and PIV. New appointments: K6GOT, EC Yolo County; K6AAW and K6SXX, OHSS; W6MLN and YLH, OES; K6EIL, OPS; K6JUD, OD; K6UPN, QO and OBS. The Sierra-Foothills Club of the Auburn Area meets the 1st Wed. of each month at the fairgrounds at 8 p.m. The president is K6ARR. W6WCA, W6FW and K6UVE have new mobile rigs. W6AF is planning s.s.b. The new Yuba-Sutter Club officers are W6MLU, pres.; K6RDA, vice-pres.; W6YLH, secy.-treas. K6GSI is putting out an FB primer on transistors in the McClellan Club's *Margin*. W6SLI, W6BIR, W6DMA, W6ESZ, W6GDO, W6GGW, W6HSB, W6HTS, W6ILZ, W6MAP, W6NOH, W6VBU, K6HNB, K6DJE, K6DJP, K6ENK, K6EWE, K6GB, K6HHH, K6HOI, K6OCY, K6PWH, K6QIF, W6QKB, K6QPT and W6ALC have been active on RTTY in the Sacramento Area. W6MLN, Sacramento, has been working K6HMK in Acampo regularly on 220 Mc. W6DYF has new beams, mobile and Viking Challenger. The RAMS held a roller skating party at Sutter Creek, with over twenty mobiles participating in the run from Sacramento. K6RGN is building an 85 per cent transistorized mobile rig. W6OPY now has v.f.o.-wagon in his Volkswagen. The 1959 officers of the SARC

(Continued on page 144)

"HAM-M" ROTOR

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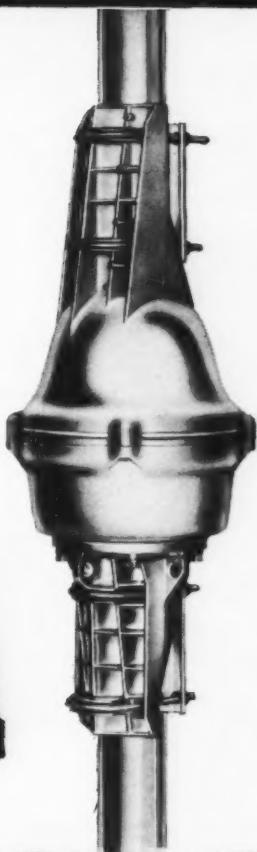
Extra heavy-duty. Thousands of "Ham-M" rotors are now in operation in every kind of climate, rotating every conceivable antenna combination. "Ham-M" is wind-proof, ice-proof, moisture-proof! Won't drift. Provides 3500 in.-lb. resistance to lateral thrust.

FIELD KITS FOR EASY INSTALLATION.

North-Center Meter Scale kit. Base plate for internal tower mounts. Anti-meter flutter kit. Mounts on shaft or flat on plate in 30 minutes.

WHY PAY MORE?

"Ham-M" is the pet of hams from coast to coast—and for good reasons! "Ham-M" gives better performance...holds heaviest antennas...stands up against the elements far better than other rotors, yet **COSTS LESS!** See "Ham-M" at your distributors: only \$119.50



EXCLUSIVE OFFER:
CDR "CALL-LETTERS" JEWELRY FREE! Hand-some rhodium-finish tie-bar and key chain, both with your call-letters engraved **FREE** with your purchase of the "HAM-M." Both bear amateur radio emblem. Just examine the "HAM-M" and get both for only \$3.60 (tax included), a \$7.20 value for half price. See your CDR distributor for details.

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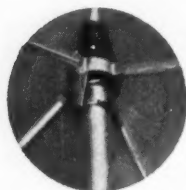
Hy-gain Ground Planes

COMMERCIAL - AMATEUR - CITIZEN BAND

Single or Multi-Frequency Operation
100 MILE PER HOUR RATING

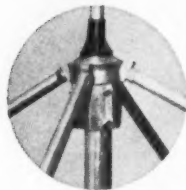
These Hy-Quality, Hy-Gain Ground Planes are designed to cover all Amateur, Commercial and Citizens Band communications frequencies from 25 through 500 mc. Especially designed decoupling stub Add-On Kits available, making possible multi-frequency operation with a single feed line. The antennas and Add-On Kits are factory pre-tuned and complete with easy-to-follow directions for quick assembly on any single or multiple frequency (up to 4). Precisely adjusted drooping ground plane radials make possible perfect 52 ohm match. All hardware hot dip galvanized and tridite treated for maximum weather ability.

Input Impedance: 50 ohms
Coaxial Termination: Type SO239
Maximum Power Input: 1,000 watts
VSWR: Less than 1.2:1 at Resonance
Unity Gain



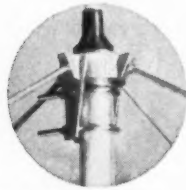
MODEL GP-1 **\$29⁹⁵**

Radiator and ground plane radials telescoping $\frac{3}{4}$ " and $\frac{5}{8}$ " heavy wall aluminum tubing type 6061T6 heat treated alloy. Heavy duty cyodac base insulator and heavy universal base casting. Fits all mast diameters up to $1\frac{1}{2}$ ".



MODEL GP-2 **\$16⁹⁵**

Radiator and ground plane radials telescoping $\frac{3}{4}$ " and $\frac{5}{8}$ " heavy wall aluminum tubing type 6061T6 heat treated alloy. Polyethylene base insulator and heavy universal base casting fits all mast diameters up to $1\frac{1}{2}$ ".



MODEL GP-3 **\$12⁹⁵**

Radiator $\frac{3}{4}$ " and $\frac{5}{8}$ " heavy wall aluminum tubing type 6061T6 heat treated alloy. Ground radials $\frac{1}{4}$ " diameter solid aluminum rods.

MODEL 2AK:
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Attaches to Models GP-1 or GP-2 Hy-Gain Ground Planes, making possible low SWR single feed line operation on any additional frequency in the 50 to 55 mc spectrum.

MODEL 3AK:
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144

are W6HGW, pres.; K6IKV, vice-pres.; K6VII, secy.; K6IRI, treas.; W6RXG, sgt. at arms; W6HQF, club rep.; W6MIW, editor, W6SXI worked 10 new ones in the ARRL DX Contest for a phone total of 170. W6GHG has 263 confirmed, W6OWM 268. W6VEZ has a new Mosley fourteen-element 2-meter beam and will be looking for 2-meter DX. C.w. men are needed in NCN to represent our section. Traffic: K6BYV 809, W6CMA 70, K6EIL 33, K6SXX 12.

SAN JOAQUIN VALLEY—SCM, Ralph Saroyan, W6JPU—K6ZCD has a new SX-101 Mark 3A receiver. K6SEV received a white slip from the FCC, for second harmonic radiation. W6QON has rebuilt his 348 receiver for s.b. K6LKI got a KVM1 mounted in his Ranchero. W6WKT was caught trying to double in a push-pull amplifier. K6AIHQ got himself a grid-dip meter. W6POV is a new call heard on 75 meters. K6OER is running an Elmac and a transistor supply while mobiling on 75 meters. W6HYR has gone modern with a new "8" line gear, and is working DX like crazy. K6SNA got a job with ARRL in West Hartford. K6MDX is operating a ham store in Modesto. W6GIW gave 33 in Sencor a code class with good success. K6GOX is waiting for E skip on 6 meters. Downey High School in Modesto boasts 13 hams. The Delta Amateur Radio Club is getting set up for Field Day with new home-brew equipment on 6 meters and 220-Mc. W6VBTK and W6VBXH have taken the Tech. Class examination. K6CPQ built a 10-meter quad and is building a kw. linear for s.b. K6HMK is on 220 Mc. with W6MLN. K6HMK also is back on 75 meters and is working on 432-Mc. gear. The Stockton RACES plan has been approved and W6OVR is looking for operators in Tracy, Escalon and Ripon. W6DBH is the Checker King. W6YOU has moved to San Jose. K6LIJ got his General Class license. W6DVI has his linear amplifier working. K6TNZ has his 20A going again after slight modification to the mike jack. Traffic: K6CPQ 230, W6USV 20, K6AXV 1.

ROANOKE DIVISION

NORTH CAROLINA—SCM, B. Riley Fowler, W4RRH—SEC: HUL, PAM; D.C. V.H.F. PAM: AYC. PNM has been appointed RM for the section. Effective liaison has been worked out between the various services in the State. Recently we forgot to include Guilford County in those counties with effective AREC-RACES 2-meter activity. Sorry, Guilford possibly has the oldest 2-meter activity in the State. BAW has met every session of the Tar Heel Emergency Net for one year, April 1, 1958—April 1, 1959. That is an excellent record. Congratulations. We need many more active "netters" in the State. PNM, RM of the NCN, desires more participation in the C.W. Net, which meets daily at 7 P.M. on 359.9 kc. Please give this your every consideration. According to the net rolls of the various nets, we have direct communications into 95 towns or cities in the State. This is very good, but should be much better. We have no way of knowing the many towns reached via AREC-RACES nets, but we believe we have a very effective communications system. Sure, we need more AREC-RACES programs that actually drill each week, but that is coming along very nicely. You amateurs who ordered amateur license plates last year but failed to order this year, and 235 such plates have not been claimed, will not have a "tag" manufactured for your car next year unless you order your 1959 "tag" immediately. Traffic: W4GXR 491, RRH 15, BAW 14, BBZ 12.

SOUTH CAROLINA—SCM, Dr. J. O. Dunlap, W4GQV—SEC: K4PJE, RM: AYU, PAM; IIE, The N. Augusta-Belvidere ARC in March held a transmitter hunt and a club meeting and is beginning an FD transmitter as a club project. The S.S.B. Net had an attendance of 461 and a traffic total of 28. K4IE had plenty of trouble with March winds and the antenna. CNZ has a new beam on 10 meters. KVF has earned a c.w. net certificate. New officers of the Aiken ARC are K4JNU, pres.; DHD, secy.-treas.; K4GXI, corr. secy.; Marjorie Britt, act. dir.; KYN, club station dir. New officers of the Columbia ARC are K4DWE, pres.; UTJ, vice-pres.; RWN, secy.; TRX, treas. All members are teen-agers. UOQ is the new president of the Charleston ARC. The club is very busy preparing for the Charleston Hamfest to be held May 30-31. ILXY is now 4F5V in Greenville. K4HDX now holds an A-1 operator certificate. K4DFW is back on the air after transmitter trouble. New Novices are KX4ERU, ERR and FJP in Barnwell. KX4DIE and ZEU are awaiting Conditional Class licenses. July 1 is the absolute deadline for new applications for ham car license plates. Traffic: K4WCZ 564, GAT 398, AYU 200, W4AKC 132, PED 75, K4BVC 71, W4CJD 69, DAW 53, CHD 52, FFH 50, KVF 42, K4IVI 33, BLF 27, PIA 15, HQK 14, IIE 13, W4CNZ 5, K4PIK 3.

(Continued on page 146)

Transistor Power Supplies* and Components

* Complete Units

D SERIES [Standard]

Continuous operation at 30 watts. Selective taps at 200, 250 and 300 volts; intermediate voltage at 1/2 selective taps. Both voltages can be drawn simultaneously if total power does not exceed continuous ratings. Positive or negative ground operation. Input and output filtering included except for intermediate tap.

Size: 4 3/4" x 3 1/4" x 1 1/4" Wt.: 10 oz. 6- or 12-V Input: **\$39.95** 24-V Input: **\$41.95**

DA SERIES

Continuous operation at 45 watts. 450 volts and 225 volts simultaneous if total power does not exceed continuous ratings. Intermittent duty to 90 watts, 450 volts at 150 MA, 225 volts at 100 MA (5 min. on, 20 min. off). Positive or negative ground operation. Input (primary voltage) filtering; partial high voltage filtering provided.

Size: 4 3/4" x 3 1/4" x 1 1/4" Wt.: 14 oz. 12-V Input: **\$57.50** 24-V Input: **\$79.50**



Toroid Transformers for Transistor Power Supply Application

H SERIES

H-6-450-1 Input: 6-VDC. Output: 450-VAC center tapped... 450 and 225 VDC from bridge rectifier... 45 watts.

H-14-450-12 Input: 12/14-VDC. Output: 450-VAC center tapped... 450 and 225-VDC from bridge rectifier... 55 watts.

H-28-450-15 Input: 24/28-VDC. Output: 450-VAC center tapped... 450 and 225-VDC from bridge rectifier... 65 watts.

H-6-100-123-150-D Input: 6-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 100 MA.

H-12-100-123-150-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 125 MA.

H-24-100-123-150-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 100, 125 or 150-VAC. DC Output: 200, 250 or 300-V at 150 MA.

Without Encapsulation (2 ozs.). 1-10 units: **\$16.00 ea.**

With Encapsulation (3 ozs.). 1-10 units: **\$18.50 ea.**



HD SERIES - 2000 CPS

HD-14-225-300-3-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

HD-28-225-300-3-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 200 MA.

Without Encapsulation (3 1/2 ozs.). 1-10 units: **\$18.50 ea.**

With Encapsulation (4 1/2 ozs.). 1-10 units: **\$21.50 ea.**

HDS SERIES - 2000 CPS

HDS-14-225-300-3-D Input: 12/14-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.

HDS-28-225-300-3-D Input: 24/28-VDC. Output: Voltage doubler configuration. Secondary tapped for either 225 or 300-VAC. DC Output: 450 or 600-V at 300 MA.

Without Encapsulation (3 1/2 ozs.). 1-10 units: **\$21.50 ea.**

With Encapsulation (4 1/2 ozs.). 1-10 units: **\$24.50 ea.**

400 CYCLE SERIES

14-115-1.5-400 Input: 12/14-VDC. Output: 115-V at 1.5 amp.

24-115-1.5-400 Input: 24/28-VDC. Output: 115-V at 1.5 amp.

Dim: 3" dia. x 1" thick. Without Encapsulation (12 ozs.).

With Encapsulation (16 ozs.). Per Unit: **\$76.00.**

Matched Pair HD Transistors

12/14-V operation—**\$11.00 per pr.**

24/28-V operation—**\$21.00 per pr.**

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Complete and concise information about beam antennas. Dimensional charts, SWR data, and construction data on parasitic arrays for the 6, 10, 11, 15, 20 and 40 meter amateur bands! Invaluable!

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by William I. Orr, W6SAI

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VIRGINIA—SCM, John Carl Morgan, W4KX—Nets: VN, 3680 kc. 1900 daily; V8N, 3680 kc. 1830 Mon.-Fri.; VFN, 3835 kc. 1900 daily. You'll be glad to know that the Richmond ARC has accepted sponsorship of the 1959 ARRL Roanoke Division Convention to be held at Hotel Jefferson in Richmond, the week end of Oct. 3 and 4. JJJ and IMP are co-chairmen. See you there. Fifteen-year-old K4CAX snagged a 40-w.p.m. certificate from the Conn. Wireless Assn.—with a "Stick" yet! His pappy, YE, says he was hard pushed with a mill. K4JKK reports the XYLS of the Roanoke Area hams have formed the "Widdlers Club" and seem to be having fun. Ken is looking for someone to draw a monthly cartoon for *Va. Ham*. Any volunteers? FOR made nationwide news wires when he boiled owl for 40 hours to help obtain a medicine shipment to France to save a critically ill French child. Welcome to Virginia to DVT, ex-K2GSJ. ZPE reports burgeoning interest in 2-meter activity in the Richmond, Petersburg, Hopewell Area using mainly 145.35 and 144.45 Mc. Also there is much v.h.f. interest in other sections of the State. K4HIA, now on RTTY, reports 27 contacts in the first 2 days. K4LPR says Norfolk is mobile happy. Often as many as 100 mobiles are on there. DX tests gave PNK eleven new countries for a total of 195. Rog says the new 75A-4 helps. CXQ has now WAc'd on 80 meters. OOL is threatening to use a bug! LW is on with super power, 70 watts! BGP, in the VFN report (which will appear in full in *Va. Ham*) says the deliberate QRMers appear to be wearying of that sport! Traffic: (Mar.) W4PE 1095, K4ELG 670, W4QDY 543, SHJ 426, K4QIX 317, KNP 312, JKK 230, W4RHA 187, K4AET 161, MEV 155, W4SNH 109, BZE 55, OOL 49, MXU 39, K4QY 35, W4CFV 29, KX 21, BGP 20, K4HIA 18, JRE 17, IIP 16, W4ATQ 15, K4PEJ 14, MSG 8, LW 5, CXQ 4. (Feb.) K4IIP 10, W4MXU 5.

WEST VIRGINIA—SCM, Albert H. Hix, W8PQQ—Asst. SCM: Festus R. Greenhouse, 8PZT, SEC: HZA, PAM: GAD, V.H.F. PAM: K8IYU, RMs: GBF, FNI, PBO and VYR. Make plans to attend the All W. Va. Hamfest at Jackson Mills July 11 and 12. The Logan Radio Club has been formed with K8MHC, pres.; K8CMW, vice-pres.; and BZY, secy-treas. The club meets once per week and has 20 members already. Other members are VLN, FB, K8MGO, K8MXO, K8KXV, K8MTW, K8SOH, K8SOF, IRL, of League Headquarters, visited the Charleston Club. West Virginia finally got the bill passed and signed for call letter auto license plates. MLT is to be congratulated on pushing this. We are indeed sorry to learn of the passing of LS and TSK. 3PZW stopped to visit HZA on his way to K84BB. CSG is the new Kanawha Co. EC. PQQ visited several stations, including 6AM, while in Los Angeles for a month. K8SOH and K8OLO are new hams in Weston. NYH is back on the day shift and is more active now. K8CAY is now on 220 Mc. A new 6-meter net has been formed known as the Wood Co. 6-Meter Net. It operates on 50.1 Mc. and active members are IBF, K8OAK, KXQ, GWR, K8HYE, K8AIB, K8BOT, K8HKW and K8BSB. K8HRO has worked 38 states on 6 meters. IHY was home for the Easter Holidays. K8DDB is on s.s.b. K8HGM has a new 6-meter rig. DDQ is recuperating at home from a broken leg. FUM is the new Cabell Co. C.D. Communications Director. Traffic: K8JLF 304, KFK 165, W8FNI 122, PBO 89, HZA 55, K8CXB 52, W8BWK 49, NYH 33, K8CSG 7, GAG 7, AEN 6, BLR 5, GWV 5, HRO 5, IYU 3, DDB 2.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, B. Eugene Spoonmore, W0DML—SEC: NIT, RMs: IA and KQD. PAMs: CXW and IJR, OES: K0BTU, RRV and YJO are building an s.s.b. exciter, RRV, DTJ and IA soon will be on 2 meters. YJO, K0GBB and BTS are on 2 meters in Colorado Springs. OMN, DRY, YMP and K0FAG assisted with communications on the C&Q Railway during the March blizzard. Plans are in the making for consolidating the Jefferson and Denver City and County EC areas. K0EDH and EDK have a new NC-303 receiver. K0ITT has a new Comanche completed. The Colorado Springs boys checking in on 3885 kc. were K0GBS, CEN, LZP, RNT, RKQ, BTS, LYT and W0CBG. HHR, MQG, AGU and W0WIC. KTX and YAE are new LCARC directors. K0JSQ is operating mobile on 6 meters. K0JTZ and his XYL have a new baby girl. According to the R.F. Carrier K0RJJD was voted into the WSRG as was one SWL. The boys have a new shack renamed the "Mecca" for rehabilitating tired and frustrated would-be geniuses or just plain "cut and try" artists. K0CEN is building a d.s.b. and a 400-watt final. K0LYL made a hurried trip to Oklahoma because of illness in the family. LVS recently made a trip to South Dakota.

(Continued on page 148)

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UTAH—SCM, Thomas H. Miller, WQWH—Asst. SCM; John H. Sampson, 70CX. SEC: FSC, PAM: BBN, V.H.F. PAM: SP, RM: JBV, K7COK has been awarded a net certificate for the Beehive Net. BAJ reports that conditions were very favorable during the DX Contest. DHJ and AJB have maintained a schedule nearly every night for a year on 160 meters. Both stations are using emergency power. DHJ is at Capitol Reef National Monument and has a 1500-ft.-long wire with one end 1000 feet high on a cliff and the other end at the shack on the valley floor. GOW, at Bryce National Park, was heard on 160 meters. K7DKA has a new transmitter. ZSW, NHX, DQW, STI, WTW, FSC and VEO are experimenting with 2-watt 10-meter f.m. transmitters. AQE is working on 2-meter equipment. GDD has a 75- and 40-meter mobile transmitter built from QST. Traffic: W7OCX 190, QWH 10, ZWJ 7, K7AUM 3, W7BAJ 3.

NEW MEXICO—SCM, Allan S. Hargett, K5DAA—SEC: CIN, PAM: ZU, V.H.F. PAM: FPB, RM: DWB. The NMEPN meets Sun., Tue., Thurs. on 3838 kc., Sun. at 0730, Tue. and Thurs. at 1800 MST. The Breakfast Club meets on 3838 kc. Mon. through Sat. at 0700 MST. The TWN meets Sun. through Sat. on 3570 kc. at 1900 MST. The EC Net meets Sun. on 3990 kc. at 1900 MST. The AREC Net meets Tue. through Sat. on 3990 kc. at 1900 MST. Please try to check in on as many of these nets as you can. We need more check-ins on nets from New Mexico. The C.W. Net desperately needs more activity from New Mexico. Albuquerque had 5 v.h.f. nets in March with a total check-in of 50. Two RACES nets had a total check-in of 16. Six Section Net certificates were issued for v.h.f. NQG gave two Conditional Class exams and has an NC-300 for sale. POI and CIN are active on 2 meters in Farmington. We now have 14 ECs, 4 ORSs, 2 OESs, 2 OOs, 6 OPSSs, 5 OBSs. New appointees are 8OME as OBS, K5PRR as OBS, K5TQP as OES. We welcome two new hams to New Mexico: KL7CRE and his XYL, W9VER. Traffic: K5WSP 2189, W0OME 611, W5DWB 346, NQG 17, K5LWN 11, W5HJF 10, K5IQL 10, DAB 9, IPK 8, W5CIN 7, K5GYA 6, W5ESN 3, VC 3, ZU 3, K5DAA 2.

WYOMING—SCM, Lial D. Branson, WTAMU—SEC: CQL, KN7HPP is a new ham in Worland; KN7HLC is a new ham in Thermopolis. CQL, the SEC, is making good progress with EC appointments and we are getting good returns on AREC applications. LKQ is the new Official Observer for Wyoming. AMU will have more time for ham radio and fishing since his retirement. The Wyoming Hamfest will be held July 25 and 26 near Buffalo, Wyo. The Casper Radio Club has one-half hour code and one-half hour theory every Tue. evening and has 26 registered students with examinations to several for Novice and General Class licenses. The Pony Express Net meets Sun. at 0830 MST on 3920 kc. The Wyoming Jackalope Net meets Mon. through Fri. at 1200 MST on 7235 kc. for traffic. The YO Net is a c.w. net on Mon., Wed. and Fr. at 1830 MST on 3610 kc. Traffic: W7DXV 80, BFL 70, K0MBT 28, W7BHH 28, K7MDT 28, W7NMW 12, BK1 8, FSR 8, CQL 5, AMU 4, K7GEH 2, GTH 2, W7YWW 1.

SOUTHEASTERN DIVISION

ALABAMA—SCM, Clarke A. Simms, jr., W4HKK—SEC: WJX, PAMs: DGH and K4BTO, RM: RLK. Congratulations to Harvell Tilley, elected the outstanding NCS of AENP for the first quarter of this year. AENB reported a traffic of 167. Welcome, K4CFD, back to Alabama and the c.w. net. DDY continued for a net certificate. Welcome to KN4FPK and PPJ, both new in Decatur. BTN has been appointed Radio Officer for RACES in Walker Co. K4JSP is the new Asst. EC for Jefferson Co. TOI will write a column for the *Alabama Section Bulletin*, which has been forced to charge for subscription because of production costs. The Madison Co. AREC program is moving forward with a new EC. K4JQF has qualified as OO Class I. K4APM and RJM are new OOs and CFD is a new OBS. There are vacancies for appointment as Official Experimental Station. The phone nets reported 467 messages for March. K4ILE, LQM, UDK and K5LFS have earned net certificates with AENP. New additions—K4YEN, an NC-300; K4TGD, a new vertical antenna; ENO a Cosmo-phone. Check your appointment certificates. If it needs endorsement, mail it NOW. Traffic: W4RLG 380, K4PFM

(Continued on page 150)

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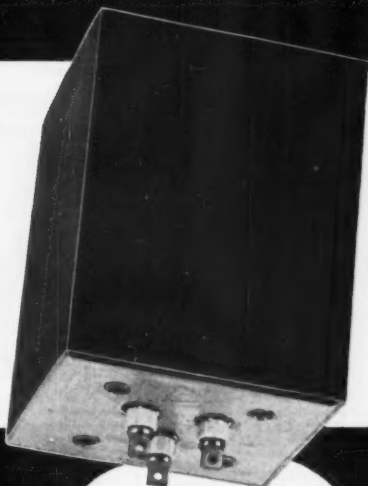
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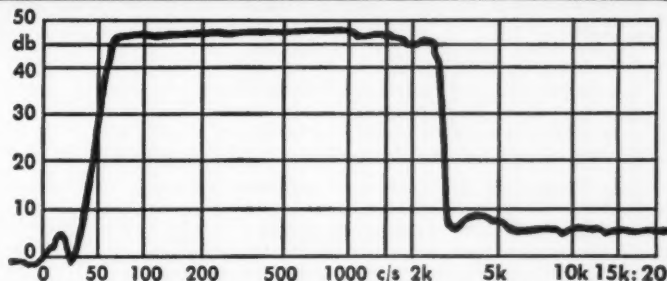
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EASTERN FLORIDA—SCM, John F. Porter, W4KGJ—SEC: 1YT, RM: K4SJH. PAMS: TAS and RMU. Section nets: FTM 3945 kc. 0700 Mon. through Sat.; FM1N, 7230 kc. 12 noon Mon. through Sat.; TPTN, 3945 kc. 1730 daily; FN, 3675 kc. 1900 Mon. through Sat.; GN, 7105 kc. 1000 Mon. through Sat.; FEPN, 3910 kc. 1830 Tue. only. Support one of your section nets if you have the time. New Naples ARC officers are AZK, pres.; K4UGE, vice-pres.; K4MBB, secy.-treas. A new ham in Naples is KN4FOM. QBO has a new NC-300. EFV received his CPC 35-w.p.m. DPD is working on a 2-meter reactance amplifier. LDM is in Thule, Greenland, but is sending in his traffic reports via LVV. K4LCD is now handling out-of-state traffic on the 20-meter S.S.B. Interstate Net. K4DRO received his CPC 35-w.p.m. KKU is the first W4 to work WAS on 6 meters. UF received her Georgia Peach certificate. The Floridians have signed up over 18 new members this year. The meeting at the Orlando Hamfest was a big success and Dot was elected president. The North Miami High Radio Club, K4THJ, now has close to 10 members. New officers of the Winter Haven ARC are K4KDN, pres.; CCC, vice-pres.; CXF, secy.; K4CK, treas.; K4RXD, publicity. K4AKQ will be off the air for the next year if he follows his doctor's orders. The Fort Myers Amateur Radio Club, Inc., is issuing a certificate to any amateur radio operator who contacts five members of the club. QSL cards will be proof of contacts made and should be sent to: K4PHY, 1048 Byron Road, Fort Myers. PZT and AYD set up a booth at the Okeechobee County Fair and handled traffic for the local folks. Your SCM attended the Orlando Hamfest and had lots of eyeball QSOs. Let's all make the Silver Spring Hamfest next. Traffic: K4QLG 767, SJH 561, W4PFC 442, K4KDN 325, OIE 207, BNE 166, LCF 153, LCD 138, W4WFF 120, K4ILB 117, W4LMT 107, 1YT 103, K4ODS 97, W4KGJ 88, K4AHW 73, BLM 67, MTH 57, COO 55, RNS 33, W4TAS 33, K4PAD 31, BY 27, W4LDM/KG1 26, K4MBB 21, W4EHW 15, K4OSQ 15, SLR 13, WASJZ 10, K4WTF 7, MTP 7, ANJ 6, W4DPD 5.

WESTERN FLORIDA—SCM, Frank M. Butler, jr., W4RKH—SEC: PQW, RM: AXP and BVE. Perry: KQP reports increasing activity in Taylor Co., with YLP, ZWY, KN4YNH and himself active. The High School club has a complete station with the call DEG and would like contacts with other school radio clubs. Fort Walton: A new directory of more than 150 amateurs in Okaloosa County has been published by RKH. Application has been made for matching Federal funds to buy \$2000 worth of radio gear for Okaloosa County RACES. The Eglin Amateur Radio Society bought a 2-meter converter and is modifying an ARC-5 transmitter. BVE reports the NWEN is covering more and more of E. Fla. OJD, PVU and UBR were missed on the net in March. DQY is doing an FB job with the 3-4-5 News, a newsletter of activities of traffic men in the 3rd, 4th and 5th regions. NTS, K4MTZ has been appointed OES. Tallahassee: GAA is active on the 75-meter nets. Pensacola: K4KBQ is the new OBS for 6 meters. The V.H.F. Club has a permanent meeting place at the USO Club. The PARC has a new Viking Challenger. Parasites has a fine column on doings of the XYLs. The NAS Club has changed its meeting times to 7:30 p.m. QAC and EQR now have emergency-power plants. Traffic: W4BYE 66, GAA 16.

GEORGIA—SCM, William F. Kennedy, W4CFJ—SEC: PMJ. PAMS: LXE and ACH. RM: DDY. GCEN meets on 3905 kc. at 1830 EST Tue. and Thurs., 0800 Sun.; GSN Mon., Thurs. and Sun. at 1900 EST on 3595 kc.; DDY as NC; 75-Meter Mobile Phone Net each Sun. at 1330 EST on 3905 kc.; MV as NC; ATL Ten-Meter Phone Net each Sun. at 2200 EST on 29.6 Mc.; KWC as NC; GTAN Sat. at 1000 EST on 7290 kc.; GPYL Net Thurs. on 7260 kc. at 0900 EST. K4CYV as NC; GAN on 7105 kc. at 1800 EST Mon. through Fri., K4KZP as net mgr. KR has received the No. 1 certificate for working all 159 Georgia counties. K4UWJ is active on phone. The new chief operator at K4MCL is K4GXV. K4ZMT made BPL, K4TDY and his mother, KN4FGY, have gone to Germany. K4VHC/4 is planning to go s.s.b. in the near future. ETD is about to return to the air with another fine signal from his new QTH. K4LVE still finds time to handle a lot of traffic each month after getting the kids off to school. K4PHA turned in a nice traffic report. K4VCM has a nice new 300-watt grounded grid-final amplifier. FWH is doing a wonderful job reading bulletins each month. DDY is the new RM for the State of Georgia. LNG is getting on 220 Mc. K4KLD and FWH are on 220 Mc. K4TFY also is on 220 Mc. K4KZP was notified he placed first in the Mass. QSO

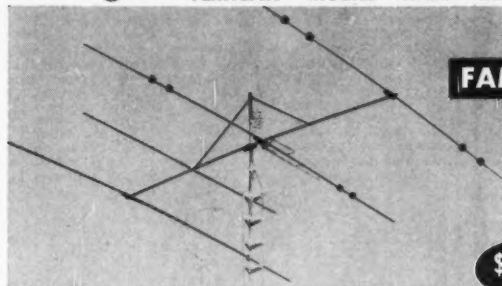
(Continued on page 152)

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Sturdily constructed. Compact for low wind resistance. Exclusive Hy-Gain gamma match adjustable for perfect match right to 52 or 72 ohm coaxial cable.

FOR 2 METERS. Up to 15 db gain in horizontal polarization over vertical whip. Only 14 inch dia., of heavy wall 1/2" aluminum tubing. Model HH2 **\$5.95**

Stack two, for additional 3 db gain.
Model HHS-2 Stacking Kit **\$3.00**

FOR 6 METERS. Resonating capacitor completely weather sealed. One inch heavy wall tubing. Model HH-6 **\$12.95**

FOR 2 AND 6. Mount them BOTH on ONE mast, concentric. Feed with ONE coax cable. Complete instructions given.

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Low angle of radiation, FB for DX. Fully automatic! Feed with single 52 ohm coax cable. Low SWR. Capacity top-hat increases radiation efficiency. Heavy duty Nylon base insulator, with strong aluminum casting to fit most mast sizes. Internal coaxial fitting.

10 THRU 80. 35 feet high. Complete, with mounting brackets and nylon guying kit. Model 18-AV **\$69.50**

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FOR 10-15-20 METERS

TRAP COIL. The proven trap principle, incorporated into a single weatherproof housing only 4 1/2" long, with 1 1/2" streamlined width! Automatically center loads for 15 or 20, shorts out for 10 meter quarter wave, when used with any standard 3 foot base section and 5 foot whip. Base fed with 52 ohm coax, less than 2:1 SWR on all bands. Trap coil only.

Model T-3 **\$14.95**

MOBILE telescoping antenna for T-3 trap coil. Base section 5/8" OD chrome plated high tensile strength steel, fits any mobile mount. Top section stainless steel. Entire 8' 4 1/2" antenna telescopes down to only 3 feet for easy garaging. Positive contact, easy lock knurled knobs. Model TBW **\$15.00**

PORTABLE Micro-Dipole antenna for two T-3 trap coils. Full 16 foot light weight aluminum dipole collapses to 3 ft. sections for easy carrying. Mounting bracket fits most mast sizes. Dipole Kit. Model TDK **\$9.95**

[Universal mounting bracket, clamps on to almost anything. Fully adjustable 2 foot mast section. Model UB **\$9.75**]

NEW! RUGGED GROUND PLANES

FOR COMMERCIAL — AMATEUR — CITIZEN BAND

Factory pre-tuned measurements enable easy setting to any exact frequency desired. Telescoping heavy wall radiator and radials. Heavy base fits masts up to 1 1/2" OD, has internal coax fitting. Drooping radials make perfect 52 ohm match. Full 1 KW power rating.

25 to 50 MC	Model GP-1	\$29.95
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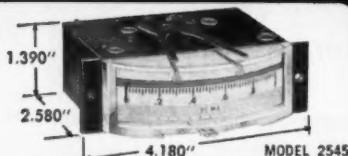
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Operation without contacts at switch points makes full scale indication always available. Insures more reliable switching by eliminating contact resistance, arcing, corrosion and flutter. Same scale length as conventional $4\frac{1}{2}$ " meters. Accurate readings because the indicating circuit is completely isolated from the switching circuit. External zero adjuster and external arms for setting 2 control points. No reset necessary.

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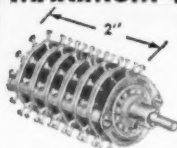


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SUB-MINIATURE SWITCHES

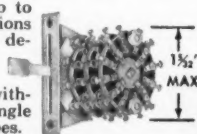
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single pole positions per deck. Series 5000, 1 to 4 double decks (2 wafers per deck), up to 11 single pole positions per wafer. Positive detent mechanism.

LEVER SWITCHES:
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Party. KN4ZYI now has a DX-100 and an HQ-110. K4LEM now has his Extra Class ticket. Traffic: K4UWJ 225, MCL 190, ZMT 173, BAI 125, VHC/4 89, LVE 72, PHA 53, HBI 30, VCM 15, W4HJZ 12, W4FWH 6.

WEST INDIES—SCM. William Werner, KP4DJ—SEC: KP4AAA. The PARAC Annual Convention was attended by over 200. New officers are CK, pres.; MS, vice-pres.; URO, secy.; ABN, treas.; ADR, AAM, ACQ and CA, directors. D installed a rotator on the 10-meter beam and has a weekly sked with W6NUN in Los Angeles. AMIG now has an HR-50. CK put up a triband quad on top of a 40 tower. HD is a civil defense communication officer and he and the e.d. director held a conference with PRARC officials to organize a RACES group using amateur equipment, and also an auxiliary group of operator/technicians to man e.d.'s island-wide v.h.f. system. The Colegio San Jose Radio Club, NY, has a 30-kva. emergency power plant in addition to a 1-kw. portable plant. AOD and WP4AOF are in charge. BV reports to the 3925 kc. Net after a five-year absence. WV ordered a Mosley Tribander TA-33 and SX-101 Mark III. AET has antenna trouble on 75 meters. AKH changed the feedline length to a 40-meter doublet so he can load the entire system on 75 meters. AKH uses a Command set as v.f.o. for DX-40. MP built a three-element wide-spaced 20-meter beam using a 4-in. 30-ft. boom. RA was in charge of the Boy Scout Jamboree. VP2KR, using a DX-20 with a 616 modulator, comes in fine on 40 meters here. KD and DJ have been reappointed ARRL Assistant Directors. RJ is visiting his brother, KAPUJ, in Washington, D. C. ACF will tour the States coast-to-coast. Notas de Mayaguez via WT: Dentro de pocos dias trasladarán para los Estados al colegio AGO sentimos mucho su partida pues ha sido muy servicial. WT saldrá pronto en 40 metros con un nuevo transmisor homemade a cristal. Los 3925 están cojeando vida, lastima que los muchachos no recuerdan casi de haber presencia los muchachos aunque sea para que el Net se vea concurrido. Despues de largo tiempo en silencio se deo e-uchar DL (Diables Locos). WT recibio la visita de W2HAA. CG salio en 40 metros despues de largo tiempo de silencio. Todos los KP4 de Mayaguez estan muy activos en 20, 40, 15 metros entre ellos esta CO en s.s.b. Traffic: KP4WT 76, DJ 5.

CANAL ZONE—SCM. Ralph E. Harvey, KZ3RV—The canal Zone Amateur Radio Assn. was entertained by Al Miller and his two daughters at a recent club meeting. Al gave a talk on a recent trip up into the Cuna Indian country with colored slides of the various points of interest. The Crossroads Amateur Radio Club has acquired a new meeting place in Coco Solo and expects to start regular meetings soon. It is planned to hold Field Day there and invite all interested amateurs to participate. An interesting event in the Canal Zone was the visit of the Japanese Exhibition Ship the *Atlas Maru*. Aboard are all types of merchandise made in Japan. The electronic exhibit was very interesting and included all types of radio equipment. New calls: AK, DS, FE, HD, RF, RI and Novice GGN. Deletions: AC, AO, CAN, CB, CH, CW, DL, DM, FC, FD, FJ, FO, GL, HM, JK, JP, LB, PWN, RL and SNN. Traffic: KZ3RV 81, HQ 88, JN 45, CC 20, SG 20, RM 16, VR 15, RR 13, WF 12, HO 9, RV 9, LC 7.

SOUTHWESTERN DIVISION

SAN DIEGO—SCM. Don Stansifer, W6LRU—The Convair Astronautics Radio Club has been assigned the call W6TUS in memory of George W. Peck, a former employee who held the call until his death in 1958. His widow has been presented a life membership in the club. Congratulations to W6EOT in Lakeside, who was recently elevated to the position of TCC Director, Pacific Area. Besides being a bang-up traffic man, Cecil also is OHS, RM for the section and EC for East San Diego County. The top traffic total from Orange County in March went to K6ZCR. K6BTO, OES in National City, now has a sixteen-element beam on 220 Mc. Welcome to the Newport Amateur Radio Society, the newest affiliated club in the section. The club is less than two years old, meets the 2nd and 4th Thurs. evenings at the Parks and Recreation Headquarters in Newport Beach. Officers are W6WPN, pres.; K6LL, vice-pres.; W6OYS, treas.; and W6WSW, secy. It looks like W6ZVQ took top honors in the ARRL contest on c.w., with W6RCD the top man on phone. W6LRU made over 200,000 points during the c.w. session with a new Apache. The April meeting of the San Diego DX Club was held at the home of W6BEZ, top man in the club with 264 countries. New OO appointees in the section include K6BX, W6VIV, K6TFT and WA6AVA. Traffic: W6EOT 784, K6ZCR 307, W6SK 102, W6ELQ 98.

(Continued on page 154)

9 NEW RIDER BOOKS

BASICS OF MISSILE GUIDANCE & SPACE TECHNIQUES By Marvin Hobbs

Electronics is playing a vital role in the race to achieve mastery of outer space and send manned missiles rocketing to the moon and beyond. You can learn and easily understand the fundamentals of the important electronic areas that will contribute to the conquest of space with this 2 volume picture book course. It is divided into two broad parts. Volume 1 covers the elements of control and guidance. Extensive coverage is given to radio and radar command links, guide beam, doppler and homing methods, fundamentals of gyroscopes, inertial and celestial

navigation, computer applications, and actuators as well as their related components. In the second volume, devoted to radio telemetry and space techniques, testing and telemetering, space exploration by optics and electronics are covered. There is a fascinating coverage of satellite theory and practice, satellite monitoring and tracking, and applications of earth satellites. Navigation in space along with components and power sources for space applications are discussed. #229, 2 vols., soft covers, \$7.80 per set; #229-H, 2 volumes in single cloth bound edition, \$9.00.

DESIGN OF TRANSISTORIZED CIRCUITS FOR DIGITAL COMPUTERS by Abraham J. Pressman, M.S. Using "worst-case" design, this book explains how switching time and drive capabilities and requirements of all the essential digital computer building blocks may be calculated, and how these blocks may be assembled in chains to perform computer-type logical operations. Methods for performing computer logic to obtain maximum operating speed and pyramiding factor are analyzed in detail. #215, \$9.95.

PRINCIPLES OF TRANSISTOR CIRCUITS by S. W. Amos, B.Sc. A remarkably lucid presentation of transistors, the fundamental theory of their operation and how to apply them in circuitry for amplifiers, complete receivers and other equipment. Starting with the basic principles of transistors, semiconductors are clearly defined and explained. The point-contact transistor and junction transistor are covered.

The book covers common base amplifiers, common emitter amplifiers, bias stabilization, small signal amplifiers, large signal amplifiers, and transistor superheterodyne receivers. #241, \$3.90.

LOW FREQUENCY AMPLIFIERS (Electronics Technology Series) edited by Alexander Schure, Ph.D. The principles and circuitry involved in the amplification of low frequency signals is presented in a thorough, easy-to-understand manner. Starting with the principles of amplification, the book covers low frequency voltage amplifiers, single-ended power amplifiers, push-pull and transistor amplifiers. #166-30, \$1.80.

FUNDAMENTALS OF RADIO TELEMETRY by Marvin Tepper. Telemetry makes possible the collection of data on which the improvement of existing rockets, missiles and aircraft is based. This exciting book explains its purpose and explores its techniques. Special sections are devoted to missile and satellite telemetry and hardware, and to data recording and processing. Specially prepared illustrations. #225, \$2.95.

ENCYCLOPEDIA ON CATHODE-RAY OSCILLOSCOPES & THEIR USES (2nd edition) by John F. Rider & Seymour Ulan. The second edition of the fabulously successful book—has been greatly expanded to include many new types of oscilloscopes and their applications. It is completely up-to-date!

Whatever your field—geophysics, aviation, automotive, medical research, television, audio, computers, automatic control or any other branch of industrial and communication electronics—you'll find the cathode-ray oscilloscope today's basic instrument. The newly revised 2nd edition of this best-selling classic begins with cathode-ray tube construction and theory, then carries you through a thorough analysis of modern oscilloscope circuitry, commercial scope types and maintenance, to a detailed treatment of how the scope is operated for all applications.

It covers the latest in special purpose cathode-ray tubes, new data on probes, related information on scope photography, pulse measurements and an illustrated section on square wave testing. #133, approximately 1100 pp., 8 1/2" x 11", \$21.95.



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BUILDING THE AMATEUR RADIO STATION by Julius Berens, W2PIK. If you intend to buy the equipment for an amateur radio station, or build one, you will find this volume indispensable. This book is the next step for the beginner amateur radio enthusiast who has earned his operating license. A guide for construction of the beginner's transmitter and receiver. Also includes instructions for receiver and transmitter on-the-air operation. #221, \$2.95.

FUNDAMENTALS OF NUCLEAR ENERGY AND POWER REACTORS by Henry Jacobowitz. After presenting basic concepts in atomic and nuclear physics essential to understanding the operation of nuclear reactors, the book discusses the construction, principles of operation, cost and power output of specific plants. Experimental reactors and the forerunners of the units now under construction are covered. Numerous carefully selected illustrations support the text and show what the various installations actually look like. #218, \$2.95.

EXPERIMENTAL ELECTRICITY FOR BOYS by Willard Doan. Youth between 12 and 16 all over the world has displayed a tremendous inquisitiveness for the workings of electricity. Here is a book that teaches the marvels of electricity through demonstration. #222, Stiff cover, \$3.45.

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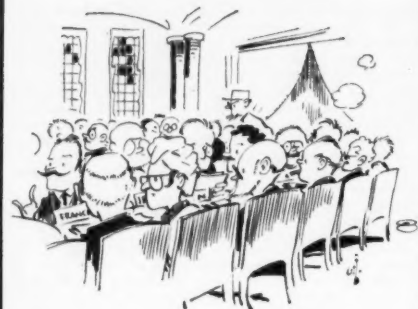
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As an individual amateur, none of us could carry much weight at the Geneva meetings this coming August. Together we can do far more. Let your voice be heard—through the ARRL—at the conference table. It's your job to become an informed member of the League!

QST and ARRL Membership \$4
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SANTA BARBARA—SCM, Robert A. Hemke, K6CVR. The Santa Barbara Radio Club had K6BE as a speaker. His subject was "Noise Found in Resistors." The talk was enjoyed by all. Coffee and donuts were served after the meeting. W6CMC and W6HUT just completed installing the Gonset Twins in W6CMC's boat. His boat also will have radar and ship-to-shore telephone. W6OUL reports his beam was down because of high winds, but is on 80-meter c.w. The Missile Amateur Radio Club is the new club at Vandenberg Air Force Base. The president is Tech/Sgt. Howard D. Riddle, K6RDX. Meetings are held the 4th Thurs. of each month at 8 p.m. at the Mesa Service Club. W6BZP and his family will be leaving soon for Germany and will remain there for about a year. Duffy will be there to study for his doctor's degree. Traffic: (Mar.) K6BVA 45, W6OUL 10, K6CVR 2, W6DTY 2.

WEST GULF DIVISION

NORTHERN TEXAS—SCM, L. L. Harbin, W3BNG —Asst. SCM: E. C. Pool, 5NFO. SEC: K5AEX. PAMs: BOO and IWQ. RM: ACK. The Division extends its deep sympathy and regret to the family of former SCM, T. Bruce Craig, W3JQD (Apr. '05-Mar. 27, '59). His devotion to amateur radio was boundless. Currently Asst. Dir. and Coms. Dir. of the Lubbock c.d. group, he had served as SCM, SEC, EC and OO, sparked AF MARS (Army MARS earlier), was past pres. of the South Plains Amateur Radio Club and had just been commissioned Lt. Col. Texas State Guard. Hams in the Panhandle of Texas made a good showing with their Weather Nets by helping the Weather Bureau keep track of the many cyclones and tornadoes during the windy month of March. The U.S. Weather Bureau sponsored a meeting of the hams in the Panhandle at Amarillo for the purpose of informing the hams of what they could do to assist the Bureau during severe weather. Many hams showed their interest by attending this meeting. K5AUZ has 139 countries confirmed. K5IDZ has a new Ranger We are happy to welcome K5GEC back on the air after a long stay in the hospital after the Brownfield explosion. RVI reports going on a new job with banker's hours. GY reports new recruits on the c.w. nets. PVT won a ham at the Midland Swapfest. What is so odd about that? Well it turned out to be a live pig. K5UDP and K5KFE are new hams in Lindsie. K5DNQ reports "going great guns on 15 with 15 countries confirmed." K5MQT is building a modulator for his ARC3 and will be on 75-meter phone soon. GNE built a new mobile to use while in New Orleans for two weeks on Navy Reserve duty. NFO has added a new ham shack and den to his house by converting his garage. K5BTZ went to the hospital for emergency appendectomy. Traffic: W5SMK 654, BKH 202, GY 162, K5JFG 103, J5N 89, W5BOO 75, K5ACD 68, IDZ 64, HGL 60, ETX 59, PXV 59, W5BTH 59, K5JEK 47, DOI 25, W5CF 20, VFM 17, SQY 16, K5GEC 12, W5KYM 8, K5DNQ 4, AUZ 2.

OKLAHOMA—SCM, Richard L. Hawkins, W5FEC —SEC: K5KFS. RMs: JXM, K5JGZ. PAMs: MFX, DRZ, VCI. The Kay County ARC is now an ARRL affiliated club. The NORA's charter meeting was held Mar. 20 with Vice-Director W5KY presenting the ARRL charter. K5INC is on 2 meters with a Seneca rig. New officers of the Sand Springs ARC are IER, pres.; K5LAD, secy-treas. K5BHT is moving to Tennessee. JWA is back in Bartlesville. MMD, RRM and K5BBA were lucky enough to QSO K54BB, K5BNQ and IWL are building a citizen-band rig. New additions to the Bartlesville gang are CQB and K5PWP. PML/DL4SS rotated back Stateside and will be stationed in Arizona. The Lawton-Ft. Sill ARC had a lot of traffic from the Easter Pages this year. CZB and AZO got an FB write-up in the Sunday edition of the paper for their part in the storm warning net. Several of the Oklahoma City mobiles proved their worth in both the grass fire and the Wilson Co. explosion. June 10 is the closing date for nominations for a new SCM; let's have several nominations. Oklahoma's Ham of the Month: CCK for her good operating and traffic activity. Traffic: K5USA 559, W5DRZ 420, FEC 414, VVQ 158, K5MBK 115, CAY 112, W5HFN 102, JXM 75, MFX 66, KY 44, PNG 32, (Continued on page 156)

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Complete with rubber
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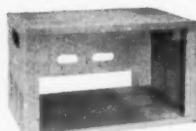


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KSDJA 20, ELG 20, WSMGK 20, K5INC 19, M2M 19, W5CCK 17, WAF 17, VLW 16, K5CBA 15, W5HIM 15, BRA 14, UCT 13, EHC 10, GOL 9, K3JOA 8, MFK 8, EZM 7, BNQ 4, W5IER 4, K5DUJ 2. (Feb.) K5MFK 14.

SOUTHERN TEXAS—SCM, Roy K. Eggleston, W5QEM—SEC: QKF, PAM, ZIN, RM: K5BSZ. The 7290-ke. Traffic Net had 42 messages, 789 messages and 1372 stations checking in. K5LIU is moving to a new QTH with no trees to block antennas and almost enough room for an antenna farm. Glad you and the OM are back in Texas. All you ham grandads should contact K5GAL and join the Grandads' Ham Club. AQK made a flying trip to W6-Land. K5GTO is a new OO in El Paso. One of the best articles on amateur radio that I have read in a long time is entitled "The Reason Why," published in the *Auto-Call*, 3NL editor. This article should be read by all amateurs. AQK is the new EC for Corpus Christi and Nueces County. K5EA is mobile with a home-brew 6146 rig. AIR is getting a new ham shack. Hurry and get back on the air, Jerry. K5RYS is mobile around El Paso, and also is a new OBS. Listen for him Mon. on 29.640 kc. at 2000, also Wed. and Fri. at the same time, except on 29.000 kc. The high winds in Southern Texas have been given the beams and antennas a rough time. Traffic: (Mar.) K5PGF 1278, OEA 381, W3ZIN 117, K5SPD 111, W5LVC 106, K5MWH 62, W5DYV 19, QLT 4. (Feb.) K5PGF 972, W5HKE 71.

CANADIAN DIVISION

MARITIME—SCM, D. E. Weeks, VE1WB—Asst. SCMs: A. D. Solomon, VE1OC and H. C. Hillyard, VO1CZ. SEC: BL. New appointments include MA as EC. Related congratulations to VOIDQ and his XYL, VOIDK, on the arrival of a new harmonic. The Halifax Club held a special civil defense course for radio operators with 30 in attendance. Instructors included WL, QV and GC. New calls heard include AGX, SV and OI. LZ's recent trip to Florida provided a work-out for his KWM-1. He maintained almost daily contact with Halifax through DD, DQ, EK, LY, OC, TA and WL. W22RX/VOI will be returning home shortly after a lengthy stay at Peppercorn. Bob has been very active while in Newfoundland, including a term as secretary of SONRA. His many friends wish him good luck. Are your Field Day preparations completed yet? Let us hope conditions will be better than last year. The Halifax Club announces that the Convention will be held at St. Mary's University, Sept. 5, 6 and 7. See you there? Traffic: VE1ADH 44, VE2NI 33, VE1VN 26, EK 8, OM 6, AEB 4, ES 2.

ONTARIO—SCM, Richard W. Roberts, VE3NG—The Toronto Sportsman Show and several club banquets helped the traffic scores. EII has certificate No. 1 for W.O.C. (Worked Ontario Counties). 2ABR and 2DB, along with 2CI, visited Kingston and Toronto. AJR was operator at the Windsor Open House. CLF is a new ORS. AEZ has an SX-100. ES was on in the DX Contest. BUR visited N.Y.C. for Easter. VD will be on again soon. DWI has a new Apache. AOE has a new QTH in Hamilton. AHH is back on the air on 20 and 75 meters. TX is rebuilding. BOV has fully recovered. COK and HF are hot operators in North Bay. ELC will be in G-Land in July. TO's QTH is now Hamilton. DIO was a visitor to VE6-Land again. BFF is on 15-meter phone. EIA is on amateur TV from Hamilton. Any others? The Sarnia ARC has two secretaries, one for VE-Land and one for its members in W-Land. Is this Canada's only international club? CFR has a new Pacemaker. The ARRL Ontario Convention will be held in London, Ont., Oct. 16 and 17, 1959. More details later. ALV, APO and APJ are new hams in the Soo Area. DYE has a new tower. AXH is on 144 Mc. DGW now has WAS, WAC, WAVE and WACAN awards. DGW is going high power. CAB is back on his feet. CJJ is in the hospital in Kingston. Also, CHF is in the same spot. CO was guest speaker at the Niagara meeting. EGN is now in Unionville. HB won a receiver at the Northtown Dinner. NG was guest at the West Side Dinner. North Bay will hold its annual affair about June 26 to 28. TX has information or write EAW, CEC, DJE and their XYLs attended the Northtown Dinner. IA, former SCM of Ontario, was quite ill in England after landing there for a holiday. Flash! MR is en route to Cocos Islands for a DX-pedition and will be on 14-Mc., s.s.b. and c.w. Traffic: VE3NAR 428, VHF 358, BZB 208, DPO 170, NG 149, NO 108, EII 106, AML 96, AUO 79, DCX 78, DUU 71, BUR 65, CFR 61, GI 59, CLF 46, BJV 38, EIH 34, EIK 29, DH 27, KM 24, DZA 23, DWN 16, RW 15, AOE 12, DLC 8, CE 6, UW 3, VD 1.

QUEBEC—SCM, C. W. Skarstedt, VE2DR—Traffic nets: c.w., OQN, 3535 kc. at 1900; Quebec Fone Net, 3760 kc. at 1845. Greetings to the following newcomers: ASB and VG, Verdun; ME, Richmond; BAO, Pont-

(Continued on page 158)

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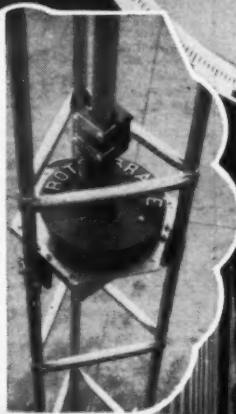


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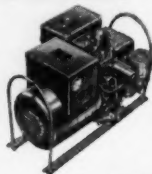
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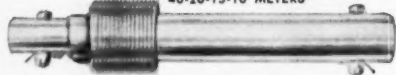
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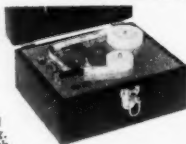
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Viau; JI, Mont Joli; AVX, St. Lambert, AAG, Shawinigan; AVK, Cape Harrison; SX, Richmond; CX, AXG, AKY, BAX, BAP, TR and BAS, Montreal. BAE is a new ham at Abitibi using an Apache, an NC-109 and a g.p. antenna. GE snuffed out those elix. YA visited England. YF and YZ moved to St. Martin. Welcome back to HR who is operating from a new house at Beaconsfield. IC, ex-LY, is back on the air. AWR is building a new exciter. OR is getting set for his annual trek to the Maritimes. LO will spend a few months in VO-land. YP sports a potent 75-meter phone signal. AIO spotted a panther in the back yard (too many 807's?). JZ constructed a swanky operating desk. JE is enthusiastic about the future prospects of mobile. In general activity among VE2 hams seems on the upswing. ABE now has 91 countries. K2VTV/VE2 applied for CP-25 and has 6-meter CCC. ATL likes the new 2-meter converter. AZT erected an 80-ft. tower. AUH and AJD are contesting to receive the first WAC and WAS in Trois Rivières. XR had a letter on RST published in QST and received favorable comment from many quarters. AGN has acquired an SX-42 receiver and expects to become more active again. Lake Shore Club (probably one of the most informal in the world) is proving popular with "out-of-town" visitors. Traffic: VE2DR 103, EC 37, CP 28, LO 14, AGN 3.

ALBERTA—SCM, Gordon W. Hollingshead, VE6VM —PAM: OD. The television station in Red Deer recently played host at a c.d. demonstration with PD operating a ham station in the TV studio. YM acted as M.C. for the show, which took place at the home of Y.M. SF and MO are active on 2 meters. TL and XZ are new calls in Edmonton. CE is sporting a triband Mosley trap beam. CE and DJ have been assigned to Annprior for a c.d. course. Your SCM urges all to put forth an effort on Field Day, be it club or individual participation. This is a very worthwhile activity. Make plans now to attend the Provincial Hamfest to be held in Calgary Aug. 1 and 2. This is a "must" for your activities calendar. Traffic: VE6HM 232, VE 35, OD 22, TG 11, SP 6, BL 5, SS 3, PV 4, TT 3, BA 2, SF 2, CO 1.

BRITISH COLUMBIA—SCM, Peter M. McIntyre, VE7J—SEC: KX, RM: TF. My activity was limited during March because of illness and the passing of my father, and I will have to go on the few meager reports I received from the BCEN Manager and the RM. BCEN, on 3650 kc. Mon.-Sat. at 2200 to 2230, gradually is adding stations but still would welcome more. The Trans-Canada C.W. Net, on 40 meters, still is in the making stage but the RM, TF, reports that he has 4 or 5 stations fairly well lined up east of the mountains. The Totem Club has taken an arthritic patient under its wing to help him obtain an amateur license. Incidentally, hope you all renewed your 1959-60 amateur license. Traffic: VETAF 195, AMW 33.

MANITOBA—SCM, James A. Elliott, VE1F. This month's question is will there be a hamfest in Manitoba this year? So far there have been no suggestions. It is likely that there will be some activity of a local nature. Congrats to Bill and Hilda (JW) on the arrival of a daughter. Bill also is a lo-fi fan and has acquired an Edison cylinder phone job! A newcomer to the mobile gang is Peg, PE. Welcome to PH, who has just been issued his ticket. We expect to hear Ethel, CB, on phone. She has just received her Advanced Class ticket. HL is back on mobile after having had some of his gear stolen. Mobiles KP, GG, HC, GC, UR, CX, IF, MJ and JQ have been active on 75 meters. GE and PE have just completed a communications course in c.d. Preparations are underway for June Field Day. There will be lots doing, so let's have more participating. Traffic: (Mar.) VE4GE 37, AI 23, PA 10, EF 9, EG 5, FI 5, JW 4, RB 4, WW 3.

SASKATCHEWAN—SCM, Lionel O'Byrne, VE8LU —EO is a new call from Stewart Valley. Welcome, Ernie. PL moved to Weyburn. SW is on 20-meter phone. Moose Jaw operated club station MA at Crestwynd for 4 days on portable power. Regina's QES, JK, reports no activity on 50 Mc. and higher. Traffic: VE3DS 18, RE 8, FU 7, HS 7, BZ 4, PD 4, CB 2, GO 2, HV 2, IG 2, NR 2, PQ 2, KV 1.

QST

TOWERS

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See Page 130
EUGENE G. WILE
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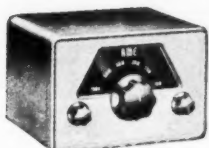
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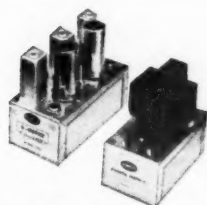
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The DB23 preselector is a low-noise, radio-frequency amplifier which can be used to improve substantially receiver performance on the amateur radio bands. An improvement of 7.5 db in signal plus noise-to-noise ratio is not uncommon.

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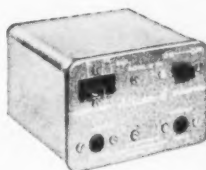


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For 6 meter use. Special Pi-net output coil with taps allows any output frequency for hookup to any receiver. Converter comes complete with tubes and crystal for 7-11 mc or 14-18 mc.

Converter: Kit form **\$19.95**
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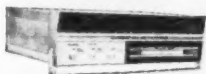


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Wire & Tested **\$29.95**

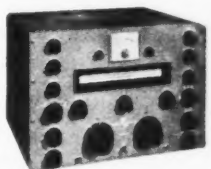
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Dual channel, bilateral receiver-transmitter. Transmits or receives on 10, 11, 15, 20, 40 and 80 meter bands; one knob band switching. Transmits or receives SSB suppressed carrier (upper or lower), SSB with carrier or CW. Receiver sensitivity—1 microvolt at 6 db S/N ratio. 3.1 kc filter for transmission and reception. Meter indications for RF output, final grid or plate current, receiver signal strength.

Less Power Supply **\$799.50 net**

P35 Power Supply **\$139.50 net**

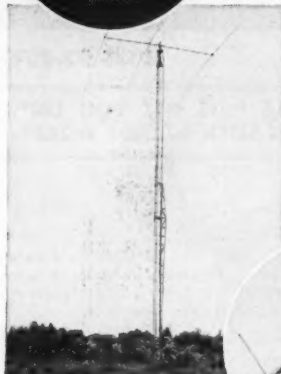
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Converter Kit, less tubes and crystal
50 Mc—144 Mc—220 Mc.....\$29.50

Wired Converter, with tubes and crystal
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The World Above 50 Mc.

(Continued from page 82)

performance curve.) W6NLZ is pushing 222 Mc. because of severe TV receiver oscillator radiation in the Los Angeles area. John has a kilowatt, c.w. or s.s.b., on 222 Mc. and is ready for serious DX skeds.

Anyone near Caldwell, N. J., interested in microwave work? Stan Tyler, W2IBO, 11 Roosevelt Blvd., No. Caldwell, would like to hear from you.

Curing Microphonic Howl in the Communicator III

For months your conductor had been putting up with microphonic howling in a Communicator III used for mobile work. At first we blamed this on the installation: the case of the unit was wedged tightly against the dash, so the shock-absorbing qualities of the rubber feet did not come into play. Then we found that others were having similar troubles. Taking the rig out of the car and running it on the bench helped, but was no cure.

Must be a microphonic oscillator tube, we thought, so a new 6CG8 (pentode-triode mixer-oscillator) was tried. Same trouble; with a strong signal tuned in the receiver would start howling again. But here was something strange — it occurred only when signals were being received.

The culprit was uncovered when we fixed another trouble. There had been some noise in tuning through strong signals, so we looked for poor wiper contacts in the capacitor gang. The rear wiper spring was slipped out, cleaned, and replaced, after bending it slightly to give more tension. This and the other wipers were given a drop of *Spra Kleen*. (Use a drop on the tip of a screwdriver, in preference to spraying. Any radio-type cleaner-lubricant will do.)

The cleaning and lubrication fixed the noisy tuning — and the microphonic trouble — all in one operation. Our howling was apparently due to varying contact resistance in the oscillator section of the tuning capacitor. The vibration caused by the response of the speaker to a strong signal caused frequency modulation of the oscillator, and set up acoustic feedback. In this game you can learn something every day!

OES Notes

K1AII, Plymouth, Mass. — Anyone for tilting-array tests on 50 Mc. during sporadic-E openings this spring and summer? Also interested in c.w. skeds on 220 Mc.

W1NMQ, Fiskdale, Mass. — Quinabaug Valley Traffic Net operating on 50.25 Mc. Wednesdays at 1830 and Sundays at 1100.

K2AZT, Baldwin, L. I. — Working W2SEU regularly on 220 Mc., but not too many other signals heard.

W4FNR, Ft. Lauderdale, Fla. — Using 50-Mc. drift transister rig built in hearing aid. No trouble in getting 50-Mc. crystal oscillator to work.

W4FWH, Doraville, Ga. — Will be operating from Brass Town Bald Mountain, in Northern Georgia, during June V.H.F. Party. Frequencies: 50.002, .008, .030 and .100; 144.030, .045, .110 and .350; 220.05 Mc. Both phone and c.w. will be used.

K4PKK, Decatur, Ga. — Resonant cavity very effective in eliminating harmonic TVI from 50-Mc. rig.

W5KTD, Shreveport, La. — On recent trip to Monroe, 100 miles to east, took along Communicator and 10-element beam. Erected beam atop a 200-foot tower and aimed west. Shreveport area stations were worked easily, creating considerable 2-meter interest on part of Monroe area amateurs.

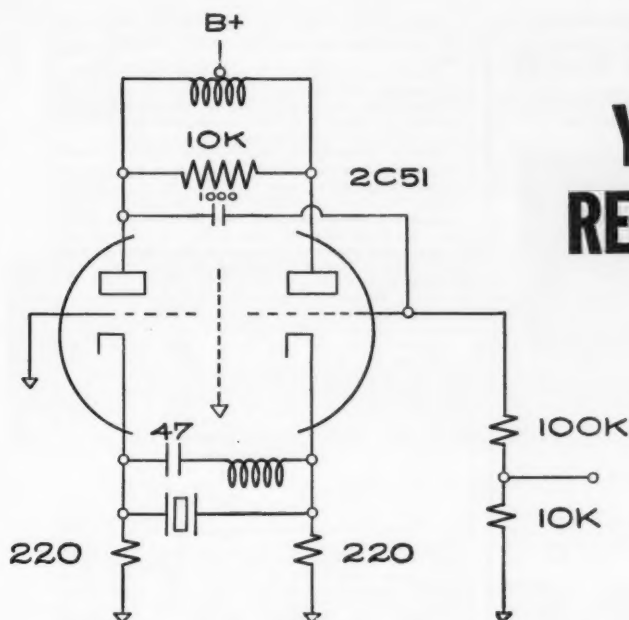
W5TQP, Albuquerque, N. Mex. — Would like skeds on 144 Mc. with well-equipped stations in El Paso and other distant points. Now have 800 watts, phone or c.w., 24-foot Yagi and 417A converter working into 75A-4. (Formerly on 2 as W1OAX, Coventry, Conn.)

K6OKK, Vallejo, Cal. — Have one station working on 37.250 Mc. Second station in works for attempted two-way communication.

W6EET, River Grove, Ill. — Copying bulletins nightly from W1AW and transmitting same on 50 Mc., phone and c.w., 3 nights weekly. Will be operating from Nebraska location June 13 through July 4.

(Continued on page 162)

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K9DTB, Villa Park, Ill.—Operating on 50.13 a.s.b. Would like more a.s.b. or d.a.b. contacts. K9KPM on 50.3 a.s.b.

W9GAB, Beloit, Wis.—Now running a.s.b. on both 50 and 144 Mc.; 100 watts on 6, kilowatt on 2. Use 6360 mixer on both bands, with 6360 buffer on 144 Mc. Antenna for 144 Mc. is 42 feet long, with gain around 18.5 db. Four Yagis of similar design are under construction for 432 Mc.

W9JYI, Indianapolis, Ind.—Using National VFO-62 with 2- and 6-meter Communicators, drive was low until broadbanding resistor was removed. This is a 470-ohm resistor, R4, across the output coil, L5. Though this may be necessary to cover the entire band with uniform output, the v.f.o. is normally used only in the first 1.5 megacycles of either band, and over this range the drive is substantially uniform with the resistor removed.

W0ETZ, McPherson, Kan.—Transmitting ARRL Bulletins on 145.5 Mc. Sunday, Tuesday and Thursday at 1945. This service seems to be appreciated by local v.h.f. gang, judging by comments received.

W0MOX, Overland Park, Kan.—Working with parametric amplifier using 1N660 diode. Have measured noise figures under 1 db., but cannot reproduce really low figures at will. Modification for easier adjustment now being made.

QST

How's DX?

(Continued from page 8)

acknowledgment at each end. . . . Halp! W1YIS needs QSL hints on FQ8AC, MP4BBL and PZ1AR; W4JH wonders about ZASU; W5RX requires V88AQ advice; and W6VUR requests aid re YA2BP. . . . W6NTR estimates he has reached the "DXC2" circle with a few cards to spare. . . . Hemispheric miscellany via DXCSL and WVDXC: VP2VB may follow his VP4DW sojourn with VP3 and/or PZ1 emanations. . . . LMRE's XE4B Socorro plans apparently were failed, temporarily at least, by the Revilla Giggles military command. . . . A Libyan ship with a Greek crew, an American owner and a British radio-man has been signing 5LWP/mm in the Caribbean. Jeeves wonders if that shouldn't be a United Nations call sign.

Ten Years Ago in "How's DX?"—There are hints in your June 1949 column that the new TVI menace is holding down countries totals here and there. But DX booms nonetheless. Among the tastier tidbits on 30 c.w. we find EK1s DI DO GW, F18RG, F8EAB, F18ZZ, FUSAA, HB1EO/HE, HZ1HZ, KC6EA, MDs 1D 4BPC 7RCS, M13AB, MT2A, NY4DD, SV5UN, VK1VU, VS7s NX RA, farflung Ws 3CHH/Iwo 8QOH/HS 0HWI/KS6 0MCF/Formosa, debatable YA1AA, YR5W, Y7TDD, ZCs 1CL 6PM and ZD9AA. Phone nifties on 14 Mc. include CA 1DI/C3 1PL ZTY, FQ88N, HA1KK, HL1BJ, LX1JW, M13s SC 81, VR3A, Ws 2EJV/PK3 7LJZ/C6, YK1AB, ZCs 1AZ 6XY, ZD3A and Z88A. . . . Eighty slows up for the summer but PY7WS, VP1s 1AA 2LX 5AT and the Oceania lads defy mounting static. . . . Forty is the band for KM6AK, KV4AA, PZ1WX, SU1CR, VR2AR, W2WVV/C1, YS1RA, ZD4AB and ZL1CH/VR4. . . . Ten c.w. features AC4RF and VQ8AD, while 28-Mc. phone fellows favor AP5Z, LU1s 1ZA and 2ZB. Adjacent 11 contributes EL3A, SP8XA, TA3GVU and YR5A. . . . KH6VP/VR4 is back home sweating out QSLs for 889 contacts, and VR5PL expects to add a.s.b. to his c.w. and n.f.m. activities. . . . Jeeves is overrun by a bunch of longhairs, and a picture of ZC6UN's operator staff rounds out the review.

QST

Sixty Cents per Foot

(Continued from page 81)

admired by all who have seen it. The total cost ran to about \$25, which is a pretty reasonable figure for a forty-footer.

After the guys were attached and smuggled up with turnbuckles, the structure was very rigid; and we haven't the slightest hesitation in climbing to the top for any work on the beam that may be necessary. After finding out how easily the tower was raised, my only regret is that I didn't make it 50 ft.

QST



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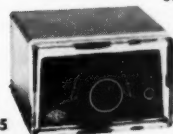
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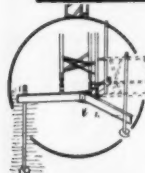
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Mobile Transceiver

(Continued from page 17)

you might have available.

Different bands can be covered by switching to a different VXO crystal and plugging in a new set of coils. The Command-Set i.f. cans can be easily fitted with an octal plug to allow plug-in arrangements.

Some of you v.h.f. enthusiasts can probably adapt this circuit to 50 or 144 Mc. very easily. In fact, with the same VXO and crystal-filter frequencies that I have used, you can cover a portion of 10 meters ($2 \times 10 + 8.55 = 28.55$ Mc.) and a portion of 6 meters ($6 \times 10 - 8.55 = 51.45$). If you can keep the unwanted VXO harmonics inside the VXO box, this should be a relatively "birdie"-free technique for getting a mobile a.s.b. signal on v.h.f.

Results

Most articles of this type end up with a few comments on results. We haven't really got any rock-crushing 60 db. over 9 reports from this little rig, but we have had plenty of nice comments on the quality and cleanness of the signal — some S1 but Q5 type reports. The first few evenings with the rig running low plate voltage on the final (18 watts peak output) netted two log pages full of contacts with some 15 different countries.

The carrier suppression is about 50 db., and for a single-tone signal the unwanted sideband is down better than 50 db. With voice inputs the other sideband is only about 30-35 db. down. So far, I haven't been able to decide whether this is caused by intermodulation distortion in the transmitter or in the expensive multiple conversion receiver I was using to check it with.

QST—

V.H.F. QSO Party

(Continued from page 50)

W2TBD 4 points (1 + 1 + 2) and also 3 section-multiplier credits. (If W2TBD contacts other Connecticut stations on these bands, they do not add to his section multiplier but they do pay off in additional contact points.)

6) Each section multiplier requires completed exchange with at least one station. The same section can provide another multiplier point only when contacted on a new v.h.f. band.

7) Awards: A certificate will be awarded to the high-scoring single-operator station in each ARRL section. In addition, the high-scoring multi-operator station will receive a certificate in each section from which three or more valid multiple-operator entries are received. Certificates will also be given to the top Novice and Technician in each section where three or more such licensees submit logs. Award Committee decisions will be final.

8) Reports must be postmarked no later than July 1, 1959, to be eligible for awards. Follow the sample log for correct form, or a message to Headquarters will bring printed blanks for your convenience.

QST—

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For 10 Meters

Weighing only 18 lbs., this Antenna is small enough to be rotated by any TV rotator. Elements are adjustable for maximum gain over the entire 10 meter band. Easy to assemble in short order, with no further adjustments necessary. Boom is 104" in length; longest element, 17' 10".



For 15 Meters

Still small enough to be rotated with the heavy duty TV rotators, this ruggedly built antenna is adjustable over entire 15 meter band. Extremely simple to put up and into operation. Rugged Boom/Mast clamp also used to support the elements. Wt: 30 lbs. Boom length 142"; longest element, 23' 10".



For 20 Meters

This heavy duty, full-sized twenty meter array is built to take it. The elements are adjustable over the entire 20 meter band, and they are telescoped three times to minimize element sag. Approximate net weight is 45 lbs. Boom length of 212"; longest element measures 35' 9".

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Average Gain: 8 1/2db. Average F/B Ratio 24 db

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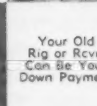
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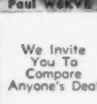
J. K. P. V.



Paul W6KVE



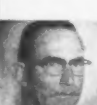
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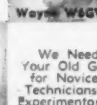
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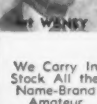
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W. W. N. E. Y.



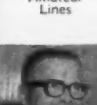
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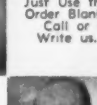
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See Page 130

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Correspondence

(Continued from page 89)

myself, and being 20 I felt still young enough to learn.

So, for three years I had rhombics for breakfast, QSL cards for coffee breaks, transmitters for lunch and receivers for dinner. I couldn't even go to the beach without hearing, "Stay right where you are, that's the antenna direction for Africa." And somehow late on a Saturday night (provided there was no contest to have to win) we'd forever end up the evening on the subject of Don Wallace. I believe I have heard every rule and regulation the FCC has published and probably some they didn't even know they had. If, at any time, I even uttered a word about this annoying obsession, I would receive the reply of, "That's what it will be like married to a ham."

But, with all kidding aside I truthfully never met a nicer bunch of fellows and probably never will. I gained much knowledge from their ways and conversations and will have many opportunities in my life to apply such; and I honestly hope, in the near future, to take the Novice test if for no other reason just to satisfy my own curiosity.

—Deanne Withers

109 Brown Street,
Sumter, South Carolina

Editor, QST:

Pardon me if my slip seems to be showing but I feel that I just must shoot off my big mouth.

Way back in the dim dark ages before the government regulated the radio field, I played around with Ford spark coils and spark gaps, telegraph keys and code.

Several months ago I scrounged eight 1958 copies of QST and read them from cover to cover. I was so impressed that I felt that I must become a ham, so I bought almost every book the ARRL publishes. Now after seeing the great advances made, the strange names and all the complicated gadgets and schematics that a person must learn to pass the license exam, I'm scared to death that I haven't got what it takes "upstairs" to pass that test. The code doesn't bother me, it's that darn technical stuff.

However, the factor that discourages me most and has me about ready to forget any desire to become a ham is right in your QST correspondence columns. It appears that the big gallon boys want to liquidate the Novice, the Technician, the Generals and all the c.w. fraternity. Even some of the Generals with modest phone equipment are out for the blood of all c.w. fans.

Fellows, remember a famous saying: "Divide and conquer." If you keep up this constant bickering among yourselves, you will be conquered by the ever greedy and grabbing commercial interests and government agencies (and I should know, for I have worked for the government for 20 years). Unless you fellows join forces once again as it was in the past with ham radio, and become as one big happy family of hams without each segment fighting for his own peculiar interests, then my friends you will go the way of the Dodo Bird and the Passenger Pigeon.

My highest regards to those "true hams" who even though they have attained the heights of glory with all ham privileges, still have sympathy and understanding for the Novice and the c.w. man.

—C. K. Rodgers

THANKS, OM.

118 Beach Street
Westerly, Rhode Island

Editor, QST:

I would like to compliment George E. Deneke, W1IGU, for the very fine business letter published in April QST, on "Love of the Sport." Not being a W1 very long I know a little of what the Novices go through. I think that they are trying very hard to become Generals or as some say, "drop the old N." I myself try to help them as much as I can and I think that if some of us Generals got on with them they would appreciate it. I know that the Novices are the future of amateur radio and I am going to give them encouragement and congratulations on their work.

—William L. Kenneth, W1LQJ

825-37th Avenue
Winona, Minnesota

Editor, QST:

My heartiest congratulations go to W1IGU, who wrote that very good letter on the Novice operator. I am a Novice operator myself and I agree with W1IGU very definitely.

(Continued on page 168)

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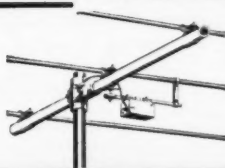
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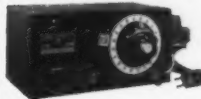
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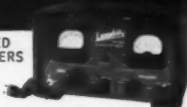
From it I learned that it's a natural field for hams—on either a full-time or part-time basis. So now I have my own mobile-radio maintenance business—and my family is mighty glad I clipped that coupon in QST.

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RADIO RELAY LEAGUE, Inc.

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We amateurs classed as Novices have a very definite problem unlike that of the General Class amateur. We have such skimpy band segments allocated to us that it is almost impossible for us to carry on good solid two-way communication. I don't want it to sound like I'm complaining because I am very grateful to have the bands I now have. Ham radio is a very wonderful hobby and why should we have these very few who spoil it for the rest of us?

These Generals who complain about the Novice operator should go back to time when they were starting out in amateur radio. They would probably find that they had some of the same characteristics as we Novices have. You have to give the Novice a chance to learn good operating procedures. It takes time to gain these operating skills—so, Mister General, let's lay off the Novice awhile.

—Scott Baudhuin, KN0QPG

215 Knollwood Avenue
Cranston 10, Rhode Island

Editor, *QST*:

I have just finished reading W1IGU's letter in the April issue and would like to thank him for his kind recognition of the Novice hams. I hope that someday I QSO him.

—Anthony L. George II, KN1KDI

THAT DERN FORM 405, AGAIN!

709 Russell Place
Plainfield, New Jersey

Editor, *QST*:

There is a statement on the back of Section 2 of renewal form 405-A which is not exactly clear to me and I wonder if you could clarify it.

The statement reads: "If the application is received by the Commission before expiration of the license, the applicant may continue operation until notified by the Commission of action on his application. Upon expiration, he must post a statement certifying that he has mailed or filed a renewal application, before expiration, specifying the date of mailing or filing."

Does this mean that if I do not hear from the Commission before expiration date I must file the above statement with the Commission, or that I must merely post the statement in my operating room? Of course, I will make an entry in my log showing date on which I mail renewal application to the Commission . . .

—William S. Hill, K3EZ

Editor's Note: In the Commission's instructions on the back of Form 405-A, the word "post" refers to a display in your station rather than sending a notice by mail. Actually, it is meant to apply primarily to commercial stations (405-A is used by a number of services in addition to amateur). In the amateur service, a simple notation in your log book adequately fulfills the requirement.

TRUE HAM SPIRIT

48 Prospect Avenue,
Westwood, New Jersey

Editor, *QST*:

This little story points out ever so forcefully the true ham spirit and why this is such a wonderful hobby with no other that can even begin to compare.

Several months ago I sent away to the *Union Belge des Amateurs-Emetteurs* for one of their certificates. They addressed the certificate this way: "Charles M. O'Brien, 48 Prospect Avenue, New Jersey, N. Y., United States!"

I finally received it—it seems that WA2BNF, a post-office employee, spotted the certificate in the Dead Letter office, looked up my address, and sent the award along, with a pleasant little note. Incidentally, WA2BNF also mentioned that he forwarded 1205 dead-letter QSLs in the period January 1, 1958 through March 28, 1959!

I wonder how many hams fully appreciate that which fellow hams who work with the Post Office do for us.

—Charles M. O'Brien, W2EQS

FIRST SS

Max-Woelm Strasse 9
Escwege, Germany

Editor, *QST*:

I want to congratulate James Flynn, K8MRS, on his very cleverly written and interesting account of his first SS which appeared in the March issue. He brought to my attention, that, be we youngsters or old-timers, we are very

(Continued on page 170)

See You at Booth 9 . . .

11TH NATIONAL A.R.R.L. CONVENTION

GALVESTON, TEXAS

Come see it in operation . . . the fabulous new

COSMOPHONE "1000"

\$1550 Complete with Power Supply

. . . and, of course, that national favorite

COSMOPHONE "50"

DISTRIBUTOR
INQUIRIES
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Cosmophone "1000" or the Cosmo-
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HAVE A SWELL
SUMMER . . . SEE
YOU NEXT FALL!

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31-28 QUEENS BOULEVARD
LONG ISLAND CITY, N. Y.

TOWERS

ALL THE WAY - IT'S EZ WAY

See Page 1-0
KEY ELECTRONICS
ARLINGTON, VA.

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Hal K2PKT Sam W2SHE

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3 1/2% tax. Dual Track 7" 1200" tape. Recorded at 3 1/4 IPS.

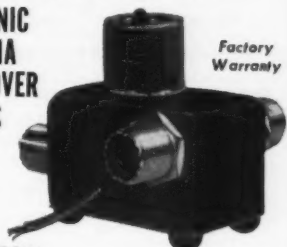
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MOBILE or
FIXED
STATION

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DKC-TRM-1
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A NEW AND IMPROVED CIR-
CUIT MAKES THESE TR
SWITCHES EVEN MORE OUT-
STANDING!

Provides for signal gain within 1.8
thru 60 mc and 144 to 148 mc range.
Gain held close to unity, lower noise
level. Both models designed for
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excellent, if not necessary, in SSB
and AM operation.

(Dropping resistor required for
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Rugged, durable, silver plated, precision
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See your electronics dealer . . . or write to:

DKC-TRM-1, 1.8 to 60 mc
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6CB6 Tube. Instan-
taneous recovery, ex-
cellent receiver
isolation. S.W.R.
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Requires B+ 125 to
150 v @ 5 ma and
heater voltage 6.3 at
3 amps.

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EVERYTHING ONLY \$250.00



HQ-100 DEAL
Same deal as above except general coverage HQ-100 receiver. Regular price \$189.00, you get clock-timer and speaker with receiver for only
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\$1.00 GETS YOU \$24.95!

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Gene Van Sickle, W9KJF, Owner
4131 N. Keystone Ave. Indianapolis 5, Ind.

TOWERS

ALL THE WAY - IT'S EZ WAY

See Page 130
UNCLE GEORGE'S RADIO HAM SHACK
SILVER SPRINGS, MD.

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LICENSE — QSL CARDS — PICTURES
AT HOME — NO TOOLS NEEDED

Pressure sensitive plastic with removable paper backing. Simply remove paper backing and apply to work (either side). Then trim excess with scissors. Flexible and preserving. License nine 1" x 4" (2 required), 18¢ ea. 8 sheets, 75¢. QSL, size 4" x 6", 20¢ ea. 4 sheets, 75¢. Penna. Residents include 3 1/2% tax. Add 10¢ handling on orders under \$06. Request prices other sizes.

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6 3/4" wide
4" high
3 3/4" deep

**Fixed or Mobile
6-METER TRANSMITTER**

For Information Write:
WACO COMMUNICATIONS, INC.
1213 CLAY • WACO, TEXAS

much the same when it comes to participating in and enjoying contests.

I also want to thank QST for continually showing equal respect for the younger members of the ham clan as well as the oldsters by publishing such worthy articles as that by KØMRS.

— J. Paul Alexander, DJØCG/KØLZT

EXTRA

3053 Marmion Street
Winston-Salem, North Carolina

Editor, QST:

ARRL favors those operators using low power in SS contest work with a point bonus. Why not a point bonus for Amateur Extra Class operators as a means of stimulating interest in this license and also to show that the ARRL is in favor of the amateur being progressive? Let's bring the contest rules up to date and at the same time stir up some ambition on the part of the ham fraternity. A point-and-a-half multiplier for an Amateur Extra Class ticket would be worth the effort for the many, many hams interested in contest work. While the standards have been lowered in recent years, ARRL can do a lot to raise the average level by promoting the higher class of license.

— Richard A. Genaille, K4ZGM

APPRECIATION

2520 Balboa
Colorado Springs, Colorado

Editor, QST:

This is strictly a letter of appreciation, and one long overdue from this amateur.

I was a Novice a year ago at this time, worked 47 states c.w. after getting the KN ticket, took the General Class license exam at FCC in November after 7 months, and passed (1) but only with the outstanding help of your *License Manual* and *Handbook*. I sincerely feel that without the ARRL there would not be anywhere near the number of hams on the air today that there is, and I for one am very grateful and appreciative to the ARRL for pointing the way to me in the form of study material and questions. I made a very definite effort in the form of self-study, of course, but where would I have been without the "course texts"?

— Quentin Rand, KØXII

S. S. Results

(Continued from page 58)

PACIFIC DIVISION

<i>Hawaii</i>	
K6HJL	31,578- 277-57-B-10
<i>Nevada</i>	
W7ZCA	133,405- 660-70-A-36
K7FEM	97,440- 516-64-A-38
<i>Santa Clara Valley</i>	
K6ERV	105,468- 521-68-A-38
K6QHE	41,496- 428-56-A-21
K6VGW	32,675- 208-53-A-27
<i>East Bay</i>	
W6PQW	188,100- 960-66-A-40
W6JXW	1175- 31-19-B-2
W6AUX	1026- 20-18-A-17
K6PYJ	975- 25-13-A-2
K6QHC	48- 6-4-B-2
K6TBJ	2- 1-1-B-2
W6KG (2 ops)	91,980- 630-73-B-40

<i>San Francisco</i>	
K6HIP	43,173- 279-54-A-27
K6EIE	30,951- 181-57-A-25
W6YES	13,869- 102-46-A-15

<i>Sacramento Valley</i>	
K8ONT/6	62,628- 307-68-A-25
W6QIV/6	30,753- 201-51-A-16
<i>San Joaquin Valley</i>	
K6QOW	103,740- 535-65-A-32
W6TZN	58,145- 329-59-A-26

ROANOKE DIVISION

<i>North Carolina</i>	
K4IEX	96,579- 441-73-A-26
K4BJZ	77,745- 365-71-A-40
K4KXT	77,211- 376-69-A-40
K4ZGM	45,210- 344-66-B-40
W4HUW	11,531- 109-53-B-11

<i>Virginia</i>	
K4HUU	90,405- 433-70-A-38
W4DKL	34,713- 200-58-A-26
K4LPR	28,704- 206-68-B-19
K4PUC	22,005- 164-45-A-19
K4QJE	15,870- 115-46-A-18
K4RZT	13,600- 131-40-A-16
W4KMS	14,235- 73-65-A-15
K4ASM	13,818- 99-47-A-16
W4ZV	12,840- 108-40-A-11
K4SOP	4620- 73-22-A-16
W4TUC	2652- 34-26-A-6
K4PRO	2394- 42-19-A-5
W4IMP	330- 15-11-B-1
W4TTC	105- 8-7-B-2
W4WSF	54- 6-3-A-1
K4DHS (K4CND DHS)	28,859- 185-53-A-24
W4MRZ (K4 MRQ MZR)	651- 31-7-A-4
<i>West Virginia</i>	
K8KLL	102,168- 475-72-A-40
W8MLX	204- 11-8-A-2
K8GWT	3- 1-1-A-1

ROCKY MOUNTAIN DIVISION

<i>Colorado</i>	
W0CYT	132,057- 603-73-A-38
K0HEM	100,500- 503-67-A-38
W0DWJ	68,160- 321-71-A-36
K0JGF	40,248- 264-32-A-19
K0RVB	36,075- 325-37-A-19
K0DCW	28,656- 200-48-A-14
K0ECJ	26,208- 182-48-A-27
W0ECY	21,900- 221-50-B-20
K0KLC	15,180- 115-44-A-10
W0DY	2142- 34-21-A-2
K0GAS	864- 24-12-A-2
K0HFL (K0 HFL PNC)	40,365- 307-45-A-21

(Continued on page 172)

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2 position crystal switch

Converter is crystal controlled
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reading simplifies output
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Powered from your receiver or
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Transmitter fully plate-mod-
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Size: 7" x 7" x 5" in height
Use same set on 6 or 12 V
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mixer in TRA-10 thru
TRA-80

Transmitter: 6U8 osc. buffer-
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Converter available in any us-
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Comes wired and tested, ready
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TRANSISTOR POWER SUPPLIES

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Ideal for use with TRA units or similar
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See page 174

TOWERS

ALL THE WAY - IT'S EZ WAY

See Page 130
AMATEUR RADIO CENTER
BALTIMORE, MD.



TELEWRITER CONVERTER FOR RECEIVING RADIO TELETYPE

To receive amateur or commercial tele-
typed messages by radio, you need only
the following equipment: 1. Good com-
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CONVERTER which is connected to
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PARAMETRIC
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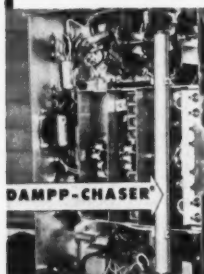
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VE3YR 119-121 JOHN ST., N. VE3JU
"Geo" HAMILTON, ONT. "Bill"

TOWERS

ALL THE WAY - IT'S EZ WAY

See Page 130
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LIGHT PLANTS, PUSH BUTTON START

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800 Watt Plant (Item 44) same as above but with larger engine and greater capacity. **\$143.50**
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W7QWH...56,850- 425-67-B-38
K7DIE...25,844- 42-42-A-38
W7JQU...5549- 69-27-A-3
W7ZOR...1620- 30-18-A-4
W7GDB (W7GGB GDD, K7BGE)...25,683- 215-40-A-23

New Mexico
W5MYL...126,735- 605-70-A-40
W5ZHL...88,622- 607-73-B-34
W5FHL...65,071- 209-69-A-30
K5OWK...29,625- 200-50-A-22
K5DMU...22,874- 200-39-A-10
W5ONK...14,081- 139-53-B-14
K5KEL...6942- 80-38-B-24
W5NBT...5774- 80-24-A-6

Wyoming
W7SZZ...50,3244- 321-53-A-25

SOUTHEASTERN DIVISION

Alabama
K4LNQ...42,030- 226-62-A-11
W4WLM...23,976- 150-54-A-24
W4D8...22,890- 164-70-B-32
W4ZGE...18,705- 109-58-A-13
K4IPN...6703- 75-30-A-13
K4LEX...5983- 56-37-A-19
W4LEN...2601- 51-17-A-5
K4PKI...257- 10-9-A-1

Eastern Florida
K48XO...137,423- 640-73-A-36
W4ZPO...56,700- 319-60-A-31
K4BCN...53,196- 288-62-A-25
K4KXX...40,863- 263-53-A-12
W4HKK...34,209- 182-63-A-13
W4WYR...16,092- 151-36-A-8
W4DTJ...3588- 47-26-A-4
W4LVV...27- 3-3-A-1
W4JO...2- 1-1-A-1
K4RNL (K4E OTN RNL SNY)...37,328- 200-63-A- -

Western Florida
K4CEF...27,300- 182-50-A-13
K4UKG...10,962- 103-36-A-11

Georgia
W4FGH...120,258- 590-68-A-37
K4MOB...41,118- 314-66-B-37
K4QYQ...11,100- 100-57-A- -
K4GRR...607- 13-13-A-6
W4LQ (W4LG, K4E OLN QYQ)...2970- 56-18-A-17

West Indies
CO3HD...7410- 95-39-B-14
KP4CGB...1210- 30-22-B-2

Canal Zone
KZ5GT...53,543- 325-55-A-16

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Los Angeles
K6EVR...212,321- 976-73-A-40
W6LNV...174,312- 809-72-A-40
K6DDO...123,270- 588-70-A-31
K6SOL...64,512- 386-56-A-28
K6INU...50,706- 317-54-A-20
W6YAX...38,173- 327-59-B-23
K6ICQ...27,300- 165-56-A-24
K6HGF...16,077- 117-46-A-17
K6GMI...14,964- 116-43-A-13
K6TLC...11,592- 92-42-A-36
K6SUW...11,067- 110-34-A-7
K6UKX...6300- 60-35-A-9
K6ELX...5859- 65-30-A-12
K6PZN...5644- 166-17-B-25
K6YLD...4104- 58-24-A-11
W6PFE...3198- 41-26-A-8
K6CZO...3018- 52-29-B-2
K6IDA...2730- 46-30-B-3

K6LXT...1302- 31-14-A-8
K6QIP...63- 21-1-A-2
W6BYT...48- 4-4-A-1
K6YNB...63- 4-4-A-1
K6IC8 (K6Q ICQ ICS)

Arizona
W7ENA...71,760- 368-65-A-29
W7WUC...66,510- 370-60-A-40
W7CAF...55,056- 298-62-A-15
W7ZVG/7...35,925- 241-50-A-12
K7BHQ...25,725- 178-49-A-28
W7WFO...11,931- 97-41-A-10

San Diego
W6WDL...3785- 58-29-A-11

Santa Barbara
K6SDE...9555- 91-35-A-3

WEST GULF DIVISION

Northern Texas
W5IMF...92,616- 457-68-A-37
W5JRM...80,160- 418-64-A-39
K5HWY...69,087- 554-63-B-36
W5KPU...61,995- 301-49-A-23
K5HID...36,983- 204-51-A-36
K5HID...27,636- 197-47-A-20
K5HFL...25,327- 154-53-A-13
W5SOD...13,803- 108-43-A-22
W5MOY...8400- 70-40-A-14

Oklahoma
W5IWL...108,216- 593-72-A-39
K5MID...32,948- 433-62-B-32
K5BBA...48,096- 252-64-A-33
K5OCY...36,656- 316-58-B-35
K5IWK...12,029- 124-33-A-19
W5OXL/5...2670- 45-20-A-5
K5MXV...36- 4-3-A- -

Southern Texas
K5EDM...115,605- 559-70-A-32
K5JCC...75,888- 410-62-A-34
K5JWK...37,800- 258-50-A-12
W5ZAL...26,730- 165-54-A-12
K5LLM...26,015- 256-55-B-31
K5HAI/5...11,876- 103-39-A-18
W5IDH...9765- 155-21-A-10
K5PFF...5445- 55-33-A-9
W5IPV/5...1104- 23-16-A-3
W5NIV...702- 18-13-A- -

CANADIAN DIVISION

Maritime
K8LTZ/VOI...22,343- 167-45-A-30
W2ZRX/VOL3036- 44-23-A-3
Quebec
VE2AZI...45,266- 243-63-A-29
VE2PZ...6642- 62-36-A-12

Ontario
VE3DRL...11,280- 119-32-A-14
VE3RM...7110- 80-36-A-8
VE3DKH...4415- 58-27-A-16
VE3DQL...3645- 46-27-A-6
VE3RT/3 (VOIDS, VE3 BOU CKA CRW)...16,317- 112-49-A-23

Saskatchewan
VE5FN...26,871- 170-53-A-20

Alberta
VE6PT...54,251- 322-59-A-23
VE6WL...48,792- 293-56-A-18
VE6IN...8991- 126-37-B-16
W7P80/VE6...75- 5-5-A-1

British Columbia
VE7CE...53,213- 325-55-A-25

Yukon-N.W.T.
VE8FO...27,094- 220-62-B-16

¹ Technician Award Winner. ² K3AGV, opr. Hq. staff, not eligible for award. ³ K3DMW, opr. ⁴ K1PXY, opr.

ARRL thanks the following amateurs for submitting their logs for checking purposes: W1BAN/1, W5PGG, W6TER.

Mobiling in Mexico

(Continued from page 68)

drinking. And do not be timid about asking if water is purified. Also mineral water, *agua mineral*, can be bought throughout Mexico. In addition, Coca Cola and Pepsi Cola are as popular in Mexico as in the U. S. and are available everywhere, even at roadside stands along the highways. Also, excellent beer is practically the national drink.

(Continued on page 174)

THE NEIL ALPHA 6 Six Meter Phone Transmitter



NOW AVAILABLE IN KIT FORM . . . \$58⁵⁰

MOST PARTS PRE-MOUNTED!

AVAILABLE FOR 6 OR 12 VOLTS!

- Only 3 inches high, all enclosed, ideal for mobile or fixed station.
- Two tuning meters eliminate meter switching, ideal when operating mobile, or to give rapid performance checks when you QSY.
- Built-in crystal switching for rapid QSY, socket for 3 crystals.
- Uses 8mc crystals, no expensive high frequency crystals needed.
- No frequency multiplication in final amplifier for highest efficiency.
- Input to final approximately 20 watts.
- Pi antenna coupler, coaxial output.
- Low distortion, push-pull modulator.

TRANSMITTER KIT - with all tubes, crystal, and step by step construction manual\$58.50

TRANSMITTER - completely wired and tested 78.50

POWER SUPPLY FOR FIXED STATION (300v @ 200ma - 6.3v @ 3.65a) 39.95

This power supply is completely wired, with tube, connecting cable, separate ON-OFF switch and SEND-RECEIVE switch, 2 indicator lamps, and a switched 110 volt outlet for connection to antenna relay.

Order
From:

THE NEIL CO. • Box 5001 (River Campus Station) ROCHESTER 20, N. Y.

For those "better-than-average"
requirements . . .

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WHEN requirements for performance and dependability cannot be met by the usual "volume control" quality pots, the Clarostat C-Line models fill the bill. Available in 2-watt carbon, 2-watt wire-wound, 3-watt wire-wound and 4-watt wire-wound models, C-Line pots offer a wide variety of resistance ranges.

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ALUMINUM CRANK-UP TOWERS



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Guy-as-you-go procedure . . .

Exclusive!

Aluminum tower outer sections crank up first permitting each section to be guyed as it locks automatically into position . . . can't get out of control . . . one man can handle safely.

Crankup feature allows tower to be raised or lowered as needed.

Protect against sudden adverse weather . . . adjust antennas without climbing tower.

SAFE! Stands 100 mph winds and tower loading to 100 pounds when properly guyed.

Rust-proof, corrosion resistant won't streak building . . . no painting.

M90-4-56 tower, 56' with winch and feet.

224.00 fob factory.

CRANK-UP TOWER ACCESSORY KIT. Rotator plate, top plate, thrust bearing, 500' guy wire. (Rotator not included)

45.00 fob factory.



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Our disheveled character has uncovered lots of prime-quality used equipment.

We are sure that the hams who have traded with us have been pleased with the trade-in allowances made on new equipment. Is your equipment above average? Do you want to trade for top dollar? If so, ask for our complete trade-in "kit" or send trade-in details on a post card to me, Art Brown, W9IHZ. Of course, we offer terms and fast service on the principal ham lines.

BROWN ELECTRONICS Inc.

1032 Broadway • Fort Wayne, Indiana

3,086,540

Oops ...

3,092,796!

See page 114

TOWERS

ALL THE WAY - IT'S EZ WAY

See Page 130

**AMATEUR ELECTRONIC SUPPLY
FOND DU LAC-MILWAUKEE, WISCONSIN**

SSB Now More Exciting than Ever with the

Sensational New

**100V TRANSMITTER
IN PRODUCTION**

Output: 100w SSB, PEP, CW; 40w AM

Also the Complete CENTRAL ELECTRONICS SSB line
600L LINEAR AMPLIFIER — Powerful, Silky Smooth
No Tuning — Pat'd Broadband Input & Output
ckts. As good as a separate amplifier on every band.

MM2 scope with adapter — tells all about you and the other fellow's signals.
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SAVE MONEY BY MAIL: Write for Bulletin "Getting Started" and "Stepping Up" in SSB. Give call letters.
Order from W9ADN at

ORGANS & ELECTRONICS Box 117, Lockport, Ill.

An extra precaution which I would advise for all American Tourists is to obtain a supply of *Entero Vioforma* tablets, manufactured by CIBA. I took one tablet after every meal. If any symptoms of alimentary disorder appear, more may be taken. They are inexpensive and may be bought at any pharmacy in the U. S. or Mexico. I ate practically anywhere I wanted of any kind of food and suffered no ill effects whatever.

The matter of highways is also much misunderstood. Generally all the major highways in Mexico are fine asphalt pavement, wide, with white center lines. They are just about as well marked as most in the States. Do not let the grades in the mountain sections give you any concern whatever. All the roads I travelled are high gear, high speed highways, as well engineered as those in the U. S. But avoid driving at night if possible. And be on the alert for cattle and burros, the same as you would in unfenced cattle country in the U. S.

Gasoline, however, is a different matter. There are three grades of gas in Mexico, all controlled by the government. The best is 90 octane and is called *Gasolmex*. It costs one peso (8c) per liter. This grade is not available at all service stations; sometimes it is, sometimes it is not; there does not seem to be any set pattern. The next grade is 80 octane and is called *Super*, and is cheaper. The third and lowest grade is 70 octane and is called *Mezolina*, and is still cheaper. To me there did not seem to be much difference in mileage between the three grades. I did two things to my car before leaving; removed the thermostat in the radiator; and set the timing for the lower grades of gas. The car ran perfectly; no trouble on the entire trip, but some ping on the hills on the 70-octane gas. Car service is no problem in Mexico. In every city I visited there were modern automobile agencies with good service department and factory trained mechanics — for all makes of American cars. Be sure your tires are good. If you have to buy a tire in Mexico, the cost will be very high.

By far, the best and most complete guide book I have seen is *Mexico by Motor*, published by the American Automobile Association. It is not for sale, but is available to members of all affiliated Auto Clubs. To me, this book is a must! Practically everything you need to know is in it, including strip maps, history, points of interest, accommodations, rates, restaurants, do's and don'ts, some basic Spanish, customs regulations — everything. But many of the fine new motels are not listed in the 1957-1958 edition.

It is hoped that many of my ham friends in the United States will avail themselves of the hospitality of our good neighbors to the south. To them I say, "Good mobiling in Mexico?" **QST**

Strays

Another case of long-distance TVI. K3DCP was heard on a TV set in Ft. Worth, Texas.

—K5MRK.



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Boonton, N. J.

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TOWERS

ALL THE WAY - IT'S EZ WAY

See Page 130

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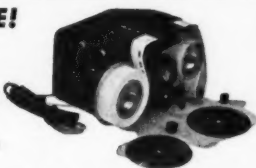
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RECEIVING
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Automatic Sender**

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Housed in Aluminum Case, Black Instrument Finished, Small—Compact—Quiet induction type motor, 110 Volts—60 Cycles A.C.

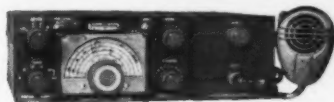
Adjustable speed control, maintains constant speed at any setting. Complete with ten rolls of double perforated tape. A wide variety of other practice tapes available at 50c per roll.

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STRAITFORD

NEW JERSEY

NEW PALCO BANTAM B-65A



The smallest, most compact Mobile Transmitter with 65 watts phone . . . 90 watts c.w.

The PALCO B-65A is only 4" high, 8" wide and 8½" deep. It can be mounted right at your finger tips, leaving lots of leg room. Companion modulator is only 4" x 4" x 9", can be mounted alongside RF unit or tucked away under the dashboard. Exclusive new tuneup meter designed with highway safety in mind. No stooping—no squinting with this one.

New Super Stable VFO. Provisions for two crystals. Complete bandswitching 10 thru 80 meters. Efficient wide range pi-network output. Panels are bright chrome, with contrasting grey knobs. Push-to-talk phone. Power requirements: either 6 or 12 volt AC or DC filament supply, 450-500V DC at 250 Ma. Tubes: 6BH6 VFO, 6BH6 buffer, 5763 buffer, 6146 ampl., OA2 reg., 6AQ5 clamper, 12AX7 audio amp-driver, two 1614 mods. Makes an ideal Novice xmtr when operated at 75 watts input.

Amateur Net: inc. mntg. bracket, RF and Mod. units, w/tubes and interconnecting cables . . . \$179.50 and pur. input cable socket . . .

At Your Dealer or **WRITE DIRECT**

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Frankfort, Ind.

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MAY 15th to JUNE 30th



HQ-110 DEAL

Buy a famous, current best-seller HQ-110 (Amateur coverage) receiver at regular price of \$249.00. Add \$1.00 more and get clock-timer (\$10 value) and S-100 speaker (\$14.95). **EVERYTHING ONLY \$250.00**



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Same deal as above except general coverage HQ-100 receiver. Regular price \$189.00, you get clock-timer and speaker with receiver for only **\$190.00**

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Hemet, California



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INEXPENSIVE

50/70 Ohm Link
Input Ceramic Grid
Tank for 80-40-20-
15-10 Meters

GP-20L—\$7.95

7 or use in tetrode grid circuits up to single 4-250A. Voltage breakdown over 600 volts D.C. Size 1 1/2" x 2 3/4" x 3 1/2" deep. Immediate delivery from stock. **MONEY BACK GUARANTEE.** Prices include US postage and insurance. Other models available:

GP-20 (No link, interstage or pi-net plate) \$6.95
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GP-25L Push-pull model with link input—\$14.95

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Topsfield, Mass.

TOWERS

ALL THE WAY - IT'S EZ WAY

See Page 130

HARRISON RADIO CORPORATION
NYC-JAMAICA, L.I., N.Y.

YL News

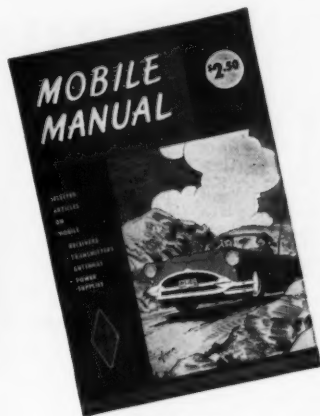
(Continued from page 78)

No. of Sections				No. of Sections			
Call	Contacts	Worked	Score	Call	Contacts	Worked	Score
W5DRI...801	70	70.088*		W8NDS...343	44	15.092	
K5BNQ...660	64	52.800*		K8ITF...164	22	4.510*	
W5ERH...568	67	47.570*		W8HWX...70	27	2.363*	
W5HWK...488	53	32.330*		W8OTK...35	15	6.56*	
K5CRH...491	49	28.074*		W8KLZ...34	13	5.53*	
W5EGD...364	45	20.475*		W8LGY...33	6	248*	
K5JXD...281	44	15.455*					
K5LIU...230	40	11.500*		K9AMD...154	30	5.775*	
K5PFF...154	32	6.160*		K9BMP...134	28	4.690*	
K5JGC...102	24	3.060*		W9VNG...100	24	3.000*	
K9MET/5.105	20	2.625*		K9BMQ...69	23	1.984*	
K5EGB...108	18	2.430*					
K5MIZ...57	25	1.881*		K9EFE...099	56	39.144	
				K5KUC/0.471	49	23.079	
K6EXQ...701	67	46.967		W9PSP...336	47	19.740*	
W6QGX...605	56	33.880		K9BFS...302	51	19.253*	
K6TQO...307	48	18.420*		K9IGU...375	45	16.875	
W6JZA...320	46	18.400*		W6ZWL...235	45	13.219*	
W6WDL...219	41	11.224*		K9HEU...262	39	12.773*	
W6AOE...185	34	7.820*		K9HKL...219	38	10.402*	
K6CKK...135	37	6.244*		K9GIC...260	28	9.100*	
K6YO...89	30	3.338*		W6WIE...156	37	7.215*	
K6PWH...132	18	2.870*		W6LYV...135	30	5.063*	
K6KUP...45	23	1.294*		K9LGW...22	10	275*	
K6UHI...40	15	600					
K6HOL...03	5	581*		KA2HA...36	15	675*	
				KA2YL...68	26	1.768	
W7DRU...326	44	17.930*		KZ5VR...563	63	44.336*	
K7ADI...169	37	7.816*		K6QPG/			
W7GGV...167	31	6.471*		KW6...66	25	2.063*	
W7HXE...137	33	4.521		VE3DDA...35	16	700*	
W7AKX...110	28	3.850*		KX6CM...243	49	11.907	
W7DIF...95	30	3.562*		ZL2JO...66	20	1.650*	
W7FDE...81	27	2.734*		ZS5OB...59	20	1.475*	
W7HHH...40	21	840		ZS6APG...106	30	3.975*	
W7GXI...27	5	169*					

OM PHONE

W1BAB...64	21	1.680*	W3IAN...10	7	88*
K1HTK...56	22	1.540*			
K1EFI...53	19	1.250*	K4JQR...59	30	2.213*
W1LKG...50	21	1.050	K4DLC...44	31	1.705*
W1LQ...40	21	1.050*	K4IEX...50	25	1.563*
W1LQQ...48	15	900	K4ASI...49	21	1.286*
K1ADH...19	11	261*	K4DRO...34	21	893*
W1HOZ...22	11	242*	W4WLM...35	16	700*
W1NJL...11	7	96*	W4SIB...30	18	675*
W1OOS...12	8	96	K4MOF...26	18	585*
W1VOE...9	6	68*	K4WCZ/		
W1MIW...9	5	56*	W4EJF...27	12	405*
			K4MLE...22	14	385*
K2DSW...71	31	2.751*	K4EHF...18	16	360*
W2GBX...71	29	2.059	W4KMS...22	13	286
K2DBB...62	26	2.015*	W4JUM...13	10	163*
W2COB...49	22	1.348*			
K2PTU...41	18	738	W5KEA...65	29	2.356*
K2EUI...28	19	665*	K5HCL...58	28	2.036*
W2QCI...43	11	591*	W5ZAL...51	27	1.719*
W2PEV...24	12	360*	W5GVP...42	26	1.365*
W2CVW...20	15	360*	K5BBA...47	20	1.175*
K2UZJ...24	9	270*	K5JCC...45	24	1.680
W2IFI...20	8	200*	W5KLB...45	24	1.080
W2GIX...13	8	130*	K5OCX...43	20	1.075*
K2UTU...13	7	114*	W5VZU...38	20	950*
W2MEO...11	6	83*	W5NXP...30	20	600
W2LKG...11	4	55*	K5BQS...28	12	420*
			K5INK...32	10	400*
W3BVL...77	33	3.176*	W5AWT...13	10	130
W3FOX...84	30	2.520			
K3DMO...63	20	2.048*	K68XA...103	43	5.536*
W3ARK...66	27	1.782	K6TXR...88	37	4.070*
W3QLW...44	27	1.485*	W6JVA...85	33	3.306*
W3EIW...49	24	1.470*	W6PVD...59	26	1.918*
W3MDO...29	15	544*	K6QYO...63	29	1.827
W3KQD...22	13	358*	K6EIE...52	25	1.625*

(Continued on page 178)



\$2.50

U.S.A. Proper
\$3.00 Elsewhere

LIKE your radio "on the move"? Then don't be without this useful and informative guide to mobile operation. It is a collection of many articles on tried and tested equipment, presented in an orderly fashion for easy reading and reference.

CONTENTS include a section on receiving, with valuable information on automotive noise suppression; a group of articles describing over 30 different mobile transmitters; sections on mobile antennas and power supplies; and excerpts from FCC's regulations governing mobile operation. The Mobile Manual for Radio Amateurs should be on the bookshelf of everyone interested in the installation, maintenance and operation of mobile stations.

American Radio Relay League, Inc.

WEST HARTFORD 7
CONNECTICUT

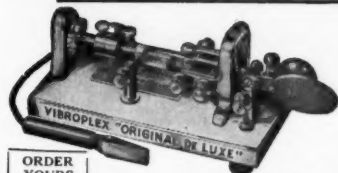
TOWERS

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See Page 130
ADIRONDACK RADIO SUPPLY
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Now enjoy Sending at Its
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upsets the
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Sending can be very tiresome and often injurious to the arm and nerves, but never when you send with a Vibroplex. Its semi-automatic action does the work for you. No special skill necessary. Suits any hand. Let's you send the way you like best, at the speed you desire. Never tires the arm, never upsets the nerves. Vibroplex is the choice of experts and hams the world over. Try it and see for yourself why so many use and recommend it to you. Smart styling, precision machined, trouble-proof, adjustable to any speed, built for rough usage and long life. Five models, standard or deluxe, priced from \$15.95 to \$29.95. Get your new Vibroplex today, for the easiest and best sending of your life. At dealers or direct.

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THREE BANDS — 10 — 15 — 20 meters
SINGLE 52 ohm coax transmission line.
Weight 29 pounds. Turning radius 14' 11".
Handles 500 W. (transmitter input, 100% am
modulated.) ELEMENTS: 6061-T6 Aluminum
tubing 1" tapering to 3/4".

Cast aluminum fittings used throughout.
PRETUNED and easy to install. Uses Hornets'
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The TB-600 with larger diameter boom and
slightly heavier castings weighs 35 lbs. This
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HORNET antennas are so easy to own—and
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\$250.00



HQ-100 DEAL

Same deal as above except general coverage HQ-100 receiver. Regular price \$189.00, you get clock-timer and speaker with receiver for only

\$190.00

\$1.00 GETS YOU \$24.95!

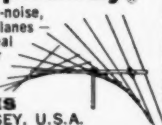
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New! Telrex "Spiralray"

Extremely high-gain, high signal-to-noise, practically no fade, all radiation planes — horizontal, vertical or oblique! Ideal for scatter-wave, satellite, mobile or point to point work! 50, 108 and 144 megacycle models available

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TOWERS

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See Page 130

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BUTLER, MO.-LOS ANGELES, CALIF.

EASY TO LEARN CODE

It is easy and pleasant to learn or increase speed the modern way — with an **Instructograph Code Teacher**. Excellent for the beginner or advanced student. A quick, practical and dependable method. Available tapes from beginner's alphabet to typical messages on all subjects. Speed range 5 to 40 WPM. Always ready, no QRM, beats having someone send to you.

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INSTRUCTOGRAPH COMPANY

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357 West Manchester Ave., Los Angeles 3, California

178

YL News

(Continued from page 170)

W6OH.....32	21	672	W9YT/		
K6GLS.....30	19	570	W9SZR.	55	25 1,375
K6ICS.....15	12	225*	W9VCH.	35	18 788*
K6CJF.....11	10	138*	W9RKP.	30	20 750*
K68XX.....11	7	96*	W9NLF.	30	19 713*
			W9GWO.	33	17 701*
			W9RYL.	31	13 403
			W9QLK.	8	3 30*
W78FK.....80	35	2,800			
W7GVP/7..42	26	1,365*			
W7UGQ.....38	24	1,140*			
W7YKQ.....40	26	1,040	K9LRS.....56	25	1,750*
W7BCE.....39	19	926*	W9LLU.....47	21	1,234*
K7CLS.....33	22	908*	W9ZSZ.....40	21	950*
W7ESN.....36	18	810*	K9IDV.....31	24	930*
W7EVU.....30	18	675*	K9IGO.....42	20	840
W7KOL.....25	16	500	W9QMS.....37	16	740*
K7BSR.....20	12	300*	K9AJR.....29	20	725*
K7GQM.....13	11	143	K9LJZ.....34	17	723*
			W9AQE.....29	19	689*
			W9EQN.....32	17	680*
W8AJW.....108	37	4,985	K9KKN.....30	18	675*
W8AYV.....64	29	2,320*	K9ESH.....15	21	394*
W8TN.....51	25	1,594*	W9CDL.....15	14	263*
W8WT.....34	19	808*	W9GAX/0..16	9	180*
W8JIN.....31	17	527*			
W8HNL.....29	14	406	HP1AC.....15	12	225*
W8DEZ.....16	9	180*	KP4KD.....51	28	1,785*
W8KKV.....9	8	90*	VE1DB.....12	10	120
			VE3AJU.....35	13	569*
K9ALP.....125	45	7,031*	VE3AZX.....32	20	800*
W9LNQ.....64	30	2,400*	VE7VJ.....22	13	289*
K9HJS.....48	23	1,380*	VO2NA.....3	3	9*

QST

Simplified Break-in Control

(Continued from page 25)

The jack marked "S.B. Exciter" is to allow the transmitter keying lead from a single-side-band exciter to be plugged in in parallel with the key. This control unit may be used to silence the receiver on s.s.b. as well as c.w. through this jack, and if the keying circuit in the transmitter is keyed on a.m. also, the unit may be used on a.m.

This unit has now been in use for several months, including the 1958 Sweepstakes contest, when it really proved itself. With an average junk box and a few good friends to help donate parts, the unit here, including t.r. switch, was built for about \$5 to \$10, most of which went into the t.r. switch. If all the parts were purchased new, it could probably be built for about \$25 or less, and it sure is worth it!

QST

Quist Quiz Correspondence

P. O. Box 687
Lawrence, Mass.

Quist Quiz Editor, QST:

When looking over the answer submitted by John Hondema, K8EVW, for the solution of his Quist Quiz problem for March 1959, I discovered there is a much easier solution than finding the surface area.

It can be solved in two easy steps. First find the average circumference. This is done by determining the average radius and multiplying by two pi. Next find the number of turns. This can be done by dividing the thickness of the roll by the thickness of an individual strand. Now the answer is easily arrived at; simply multiply the number of turns times the average circumference. This gives the exact answer much quicker than is possible by the surface method.

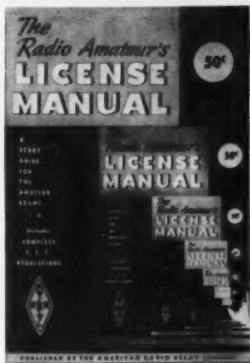
— Ronald Blackburn, K9GVO

UP TO DATE . . .

THE 42nd edition of the Radio Amateur's LICENSE MANUAL is complete, up to date and revised to include latest information on amateur licensing. Contains information on questions included in FCC amateur exams, all the dope on frequency privileges for the various classes of amateur licenses, the full text of RACES regs, details of the U.S.-Canada Reciprocal Operating Agreement and code-practice schedules, and the current FCC examination schedule. A useful manual for all, newcomer and oldtimer alike.

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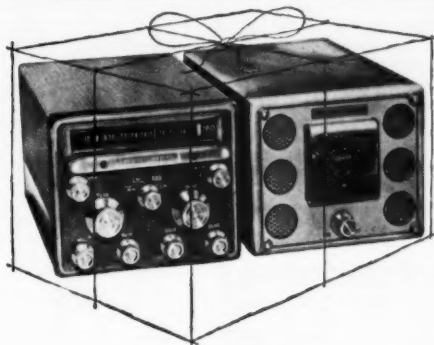
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ALL THE WAY - IT'S EZ WAY

See Page 130

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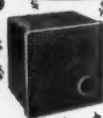


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See Page 130

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178

YL News

(Continued from page 176)

W60H.....32	21	672	W9YT/		
K6GLS.....30	19	570	W9SZR..55	25	1,375
K6ICS.....15	12	225*	W9VCH..35	18	788*
K6CJF.....11	10	138*	W9RKP..30	20	750*
K6SXX.....11	7	96*	W9NLF..30	19	713*
			W9QWO..33	17	701*
			W9RYL..31	13	403
			W9QLK...8	3	30*
W78FK.....80	35	2,800			
W5GVP/7..42	26	1,365*			
W7UGQ.....38	24	1,140*	K0LRS...56	25	1,750*
W7YKQ.....40	26	1,040	W0LLU...47	21	1,234*
W7BCE.....39	19	926*	W0ZS2...40	21	950*
K7CLS.....33	22	908*	K0IDV...31	24	930*
W7ESN.....36	18	810*	K0IGO...42	20	840
W7EVU.....30	18	675*	W0QMS..37	16	740*
W7K0I.....25	16	500	K0AJR...29	20	725*
K7BSR.....20	12	300*	K0LJZ...34	17	723*
K7GQM.....13	11	143	W0AQE..29	19	689*
			W0EQN..32	17	690*
W8AJW.....108	37	4,995	K0KKN..30	18	675*
W8AYV.....64	29	2,320*	K0ESH..15	21	394*
W8TNI.....51	25	1,594*	W0CDL..15	14	263*
W8WT.....34	19	808*	W0GAX/0..16	9	180*
W8JIN.....31	17	527*			
W8HNI.....29	14	406	HP1AC...15	12	225*
W8DEZ.....16	9	180*	KP4KD..51	28	1,785*
W8KKV.....9	8	90*	VE1DB..12	10	120
			VE3AJU..35	13	569*
K9ALP.....125	45	7,031*	VE3AZX..32	20	800*
W9LNQ.....64	30	2,400*	VE7VJ..22	13	286*
K9HJS.....48	23	1,380*	VO2NA...3	3	9*

QST

Simplified Break-in Control

(Continued from page 25)

The jack marked "S.B. Exciter" is to allow the transmitter keying lead from a single-side-band exciter to be plugged in in parallel with the key. This control unit may be used to silence the receiver on s.s.b. as well as c.w. through this jack, and if the keying circuit in the transmitter is keyed on a.m. also, the unit may be used on a.m.

This unit has now been in use for several months, including the 1958 Sweepstakes contest, when it really proved itself. With an average junk box and a few good friends to help donate parts, the unit here, including t.r. switch, was built for about \$5 to \$10, most of which went into the t.r. switch. If all the parts were purchased new, it could probably be built for about \$25 or less, and it sure is worth it!

QST

Quist Quiz Correspondence

P. O. Box 687
Lawrence, Mass.

Quist Quiz Editor, QST:

When looking over the answer submitted by John Hondema, KSEVW, for the solution of his Quist Quiz problem for March 1959, I discovered there is a much easier solution than finding the surface area.

It can be solved in two easy steps. First find the average circumference. This is done by determining the average radius and multiplying by two pi. Next find the number of turns. This can be done by dividing the thickness of the roll by the thickness of an individual strand. Now the answer is easily arrived at; simply multiply the number of turns times the average circumference. This gives the exact answer much quicker than is possible by the surface method.

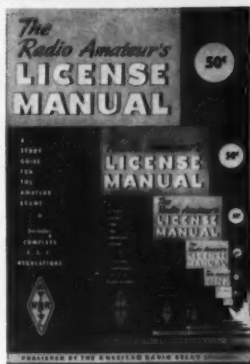
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for inexperienced man who wants on-the-job training in TV transmitter operation. First phone required.

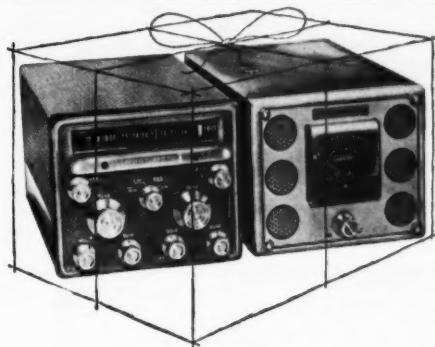
BOX 185, QST

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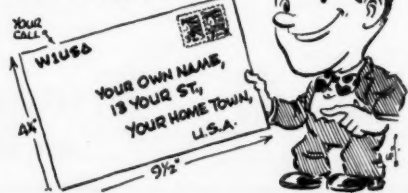
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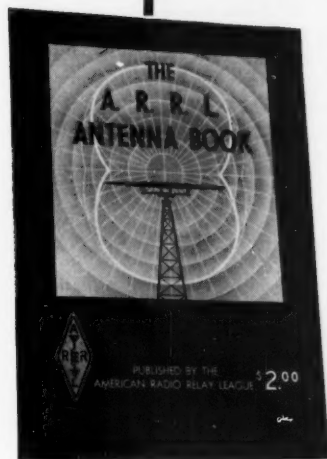
The function of the ARRL QSL Bureau system is to facilitate delivery to amateurs in the United States, its possessions, and Canada of those QSL cards which arrive from amateur stations in other parts of the world. Its operation is made possible by volunteer managers in each W, K and VE call area. All you have to do is send your QSL manager (see list below) a stamped self-addressed envelope about 4 1/4 by 9 1/2 inches in size, with your name and address in the usual place on the front of the envelope and your call printed in capital letters in the upper left-hand corner.

- W1, K1 — G. L. DeGrenier, W1GKK, 109 Gallup St., North Adams, Mass.
W2, K2 — North Jersey DX Association, Box 55, Arlington, New Jersey.
W3, K3 — Jesse Bieberman, W3KT, P.O. Box 400, Bala-Cynwyd, Pa.
W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.
W5, K5 — Brad A. Beard, W5ADZ, P.O. Box 25172, Houston 5, Texas.
W6, K6 — Horace R. Greer, W6TI, 414 Fairmount Avenue, Oakland, Calif.
W7, K7 — Salem Amateur Radio Club, P.O. Box 61, Salem, Oregon.
W8, K8 — Walter E. Musgrave, W8NGW, 1245 E. 187th St., Cleveland 10, Ohio.
W9, K9 — J. F. Oberg, W9DSO, 2601 Gordon Drive, Flossmoor, Ill.
W0, K0 — Alva A. Smith, W0DMA, 238 East Main St., Caledonia, Minn.
VE1 — L. J. Fader, VE1FQ, P.O. Box 663, Halifax, N. S.
VE2 — George C. Goode, VE2YA, 188 Lakeview Ave., Point Claire, Montreal 33, Que.
VE3 — Leslie A. Whitham, VE3QE, 32 Sylvia Crescent, Hamilton, Ont.
VE4 — Len Cuff, VE4LC, 286 Rutland St., St. James, Man.
VE5 — Fred Ward, VE5OP, 899 Connaught Ave., Moose Jaw, Sask.
VE6 — W. R. Savage, VE6EO, 833 10th St., North Lethbridge, Alta.
VE7 — H. R. Hough, VE7HR, 1684 Freeman Rd., Victoria, B. C.
VO1 — Ernest Ash, VO1AA, P.O. Box 8, St. John's, Newf.
VO2 — Douglas B. Ritecy, Dept. of Transport, Goose Bay, Labrador.
KP4 — E. W. Mayer, KP4KD, Box 1061, San Juan, P. R.
KH6 — Andy H. Fuchikani, KH6BA, 2543 Namanu Dr., Honolulu, T. H.
KL7 — KL7CP, 310-10th Ave., Anchorage, Alaska.
KZ5 — Catherine Howe, KZ5KA, Box 407, Balboa, C. Z.

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See Page 130
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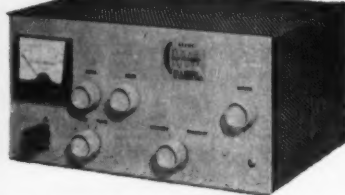


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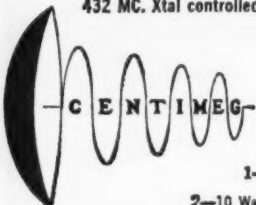
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NET

Design Center..... 50.5 MC or as specified
Polarization..... Horizontal
Radiation Pattern..... Essentially Circular
Gain (compared to a
straight half wave dipole)..... 9
Impedance..... 52 ohms
V.S.W.R..... 1:1 at design center
Diameter..... Approx. 39"
Net Weight..... 2½ lbs.
Shipping Weight..... 7 lbs.

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it consists of a half-wave-
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matching is given for standard 52 ohm series
cables; RG/8U, RG/58U, etc., making the
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MODEL 6-R SPECIFICATIONS

I.A.R.U. News

(Continued from page 69)

Peru: R.C.P., Box 538, Lima

Philippine Islands: P.A.R.A. QSL Bureau, 67 Espana

Extension St., Quezon City

Poland: PZK QSL Bureau, P.O. Box 320, Warsaw 2

Portugal: Rua de D. Pedro V., 7-4º, Lisbon

Roumania: A.R.E.R., P.O. Box 95, Bucharest

Saar: via Germany — D.A.R.C.

Salvador: YSIO, Apartado 329, San Salvador

Singapore: via Malaya

South Africa: S.A.R.L., P.O. Box 3037, Cape Town

Southern Rhodesia: R.S.S.R., Box 2377, Salisbury

Spain: U.R.E., P.O. Box 220, Madrid

St. Vincent: VP2SA, Kingstown

Sweden: S.S.A., Stockholm 4

Switzerland: U.S.K.A., Knutwil

Syria: P.O. Box 35, Damascus

Trinidad: John A. Hoford, VP4TT, Box 554, Port-of-Spain

Tunisia: Francois DeVichi, 5 Rue Can Robert, Tunis

Uganda: P.O. Box 1803, Kampala

Uruguay: R.C.U., P.O. Box 37, Montevideo

U.S.S.R.: Central Radio Club, Postbox N-88, Moscow

Venezuela: R.C.V., P.O. Box 2285, Caracas

Virgin Islands: Richard Spenceley, Box 403, St. Thomas

Wake Island: T. D. Musson, P.O. Box 127

Yugoslavia: S.R.J., Postbox 48, Belgrade

1959 DX Contest High Claimed Phone Scores

Single Operator

W3DHM	261,660	196	445
W1PDF	226,746	171	442
W9EWC	222,950	182	409
W1ONK	213,300	150	478
W3ALB	202,608	168	402
W8NWO	200,718	177	378
W8NXP	191,709	179	357
VE7ZM	185,058	149	414
W9FGB	184,977	153	403
VE4BO	180,504	138	439
W9WHM	164,160	152	360
W2UPN	156,390	165	322
W8FVY	156,738	151	346
VE3VL	154,632	152	340
K5MDX	148,080	160	304
W6AED	146,016	114	338
W9NZM	145,390	155	313
W9GIL	135,888	149	304
W4NBV	130,011	151	287
W4EFX	124,270	154	270
W1BIH	111,537	153	244
K2GXI	110,121	141	261
W3EQA	104,284	124	282
K4QJL	101,640	121	280
W4AIX	98,946	138	239
W2ZX	97,630	130	251
W1FZ	96,624	122	264
W7WDM	95,121	117	271
W6RCD	94,806	138	229
W3KT	86,352	112	257
VE3EHR	75,240	110	225

Multiple Operator

W3DRD	75,144	124	202
VE2JR	73,337	113	218
W8AJW	72,011	107	225
W3IMV	71,904	107	224
W5INL	70,596	111	215
W5ALB	70,470	81	290
K4UIV	70,020	90	262
W8WT	68,445	117	195
W6SIA	66,768	107	208
K4JQR	64,125	95	225
VE3QU	63,327	101	209
W6NJU	62,328	98	212
W8VOW	61,491	103	199
W3BB	61,275	95	215
W3ZSS	59,691	101	197
K4TJL	56,304	102	184
K2OMY	56,232	99	190
W9LNM	53,790	110	163
W3ORU	51,528	76	226
W1DIS	50,895	87	195
W1GET	50,176	98	182

Single Operator

KH6IJ	427,455	69	2065
VP9L	228,270	70	1087
ON4OC	148,901	61	816
G3DO	98,832	48	697
C02DD	77,220	39	660
XE1SN	75,152	56	448
G2DYV	72,912	56	434
KZ5US	67,982	38	600
DL4KM	60,516	36	561
PA0HBO	55,511	39	483
DL4RM	54,405	31	585
VP9BY	53,460	44	457
KH6RR	51,240	35	488
XE1SO	48,755	49	332
SM3AZI	48,600	45	360
W9KLD/KL7	47,109	41	383
GM3BCL	33,108	31	356
K4ZUJ	32,364	31	348
TI2RO	31,780	28	380

Multiple Operator

KM6BP	30,294	34	297
HP1AC	29,700	25	396
CX2CN	28,872	24	401
PA0WJP	27,335	35	261
OA4V	26,026	26	335
DL6EN	24,224	22	367
KP4KD	23,970	17	470
ZS9OA	22,286	22	338
KX6CM	20,801	28	249
OZ5JT	20,634	38	181
OA4DE	20,434	34	203
11DFC	20,160	32	210
ET2BP	15,075	15	335
LA4TE	14,904	18	276
XZ2SY	14,880	31	160
HTC	14,391	27	179
OQ5FV	13,311	17	263
PA0XX	13,284	18	246
11CBZ	12,441	33	127
ZK2AB	11,625	31	126
LU2BN	11,610	18	215

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TOWERS ALL THE WAY - IT'S EZ WAY

See Page 130
ELECTRONIC SUPPLY
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No. 4 — COMPLETE AMATEUR RADIO THEORY COURSE. A complete, simplified home study theory course in radio covering the Novice, Technician, Conditional and General classes — all under one cover — with nearly four hundred typical FCC type questions to prepare you for license exam. No technical background required. You also get, FREE, a guide to setting up your own Ham station. All for the amazing low, low price of **\$3.95**

No. 5 — RADIO AMATEUR QUESTIONS & ANSWERS LICENSE GUIDE. A "must" if preparing for Novice, Technician or general class exams. Approx. 200 questions & answers (most multiple choice type) similar to ones given on FCC exams. Has 2 typical FCC type exams. Other questions by subjects, easier to study. Low, low price of **50¢**

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USE THIS NEW, RUGGED, LIGHT WEIGHT "SAFETY-MIKE" AND KEEP BOTH HANDS ON THE WHEEL.

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Mobilier controlled reluctance safety-mike, response 400 to 3,000 cps. Resists heat, humidity, shock and vibration. **Net \$17.50**

Mobilier type safety-mike with crystal unit designed primarily for fixed station use. AM and SSB. Response 100 to 6,000 cps. **Net \$13.00**

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HAM-ADS

(1) Advertising shall pertain to radio and shall be of nature of interest to radio amateurs or experimenters in their pursuit of the art.

(2) No display of any character will be accepted, nor can any special typographical arrangement, such as all or part capital letters be used which would tend to make one advertisement stand out from the others. No Box Reply Service can be maintained in these columns nor may commercial type copy be signed solely with amateur call letters.

(3) The Ham-Ad rate is 30¢ per word, except as noted in paragraph (6) below.

(4) Remittance is not carried on our books. No cash or contract discount or agency commission will be allowed.

(5) Closing date for Ham-Ads is the 20th of the second month preceding publication date.

(6) A special rate of 7¢ per word will apply to advertising which in our judgment, is obviously non-commercial in nature. Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, takes the 7¢ rate. Address and signature are charged for. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising so classified takes the 30¢ rate. Provisions of paragraphs (1), (2) and (3), apply to all advertising in this column regardless of which rate may apply.

(7) Because error is more easily avoided, it is requested copy, signature and address be printed plainly on one side of paper only. Typewritten copy preferred but handwritten signature must accompany all authorized insertions.

(8) No advertiser may use more than 100 words in any one issue nor more than on ad in one issue.

Having made no investigation of the advertisers in the classified columns except those obviously commercial in character, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products or services advertised.

QUARTZ—Direct importers from Brazil of best quality pure quartz suitable for making piezo-electric crystals. Diamond Drill Carbon Co., 248 Madison Ave., New York City 16.

MOTOROLA used FM communications equipment bought and sold W5BCO, Ralph Hicks, 204 E. Fairview, Tulsa, Okla.

WANTED: Cash or trade, fixed frequency receivers 28/42 Mc. W5Y1Y, Troy, Ill.

WANTED: Early wireless gear, books, magazines, catalogs before 1922. Send description and prices. W6GH, 1010 Monte Dr., Santa Barbara, Calif.

KWM-1 wanted. Also few high plate dissipation tubes, radios BC348, ARN14, ARN36, ARN3, 51 Series (near 51J, 51R, communication receivers, transmitters, Dames, W2K1W, 308 Hickory, Arlington, N. J.

ATTENTION Mobiles! Leeco-Neville 6 volt 100 amp. system alternator, regulator & rectifier, \$45.00. Also Leeco-Neville 12-volt 100 amp. system, alternator, regulator & rectifier, \$85.00. Good condition, H. A. Zimmerman Jr., K2PAT, 115 Willow St., Brooklyn 1, N. Y. Ulster 2-3472.

CASH for your gear. We buy as well as sell. Write for cash offer or trade. We stock Elmac, Gonset, Hallicrafters, Hammarlund, Johnson, Lyaco Master Mobile Morrow, National and other ham gear. H & H Electronic Supply, Inc., 506 Kishwaukee St., Rockford, Ill.

RECEIVERS: Repaired and aligned by competent engineers, using factory standard instruments. Authorized Factory Service Station for Collins, Hallicrafters, Hammarlund, National. Our twenty-second year. Douglas Instrument Laboratory, 176 Norfolk Ave., Boston 19, Mass.

SAN FRANCISCO and vicinity. Communication receivers repaired and realigned. Guaranteed work. Factory methods. Special problem. Invited, any equipment. Associated Electronics, 58 South P St., Livermore, Calif. W6KF, Skipper.

TRANSFORMERS (3) W2EWL Special, \$3.00 postpaid. 88B, latest diagram, template, 3 xfrms, disc ceramic Emlca condensers, coils L1 thru L7 for W2EWL Special (Mar. 1956 QST), \$10.95 postpaid. Vitale, W2EWL, Denville, N. J.

COAXIAL Cable. New surplus RG-54/U, 58 ohms impedance—30 ft. prepaed, \$1.00. Radio magazines, buy, sell, trade, R. Farmer, 3009 No. Columbia, Plainview, Texas.

KNOX Electronic Supply, Inc. "Where Your Trade-In is always worth more!" 227 E. Chestnut St., Gainesburg, Ill.

ANTENNA 80-40-20-15-10, \$21.95. Patented. Lattin, W4JRW, Box 44, Owensboro, Ky.

HALLICRAFTERS, Drake Central Electronics, Gonset, Ham gear, Jerry W5EPI, Swartzlander Radio Limited, 1220 Stillwell Avenue, Fremont, Ohio.

FIFTH Annual Syracuse VHF Roundup, October 10, 1959

WANTED: Battery receivers of 1920s, Eria, Acme, Radiola, Grebe, etc. Also UV199 thru UV206 tubes for electrical test. Buy or borrow. Grote Reber, Green Bank, West Virginia.

MICHIGAN Ham! Amateur supplies, standard brands. Store hours 0830 to 1730 Monday through Saturday. Roy J. Purchase, WSRP, Purchase Radio supply, 327 E. Hoover St., Ann Arbor, Michigan. Tel. NOrmandy 8-262.

AUTHORIZED factory distributors for Adjutavolt, B&W, Elmac, Gelo, General Electronics, Glas-Line, Gonset, Hammarlund, Hexacon, Johnson, National, Penna TMC, Torb & Voraline & Westinghouse. Wanted: xmtr's and special-purpose tubes and lab equipment. Trade-ins accepted. Open Monday through Saturday. Barry Electronics Corp., 51 Broadway, N. Y. 12, N. Y. Phone WAiker 5-7000.

QSLs? Rainbow maps? State maps? Mobiles? Samples 25¢ (refunded); Callbooks (Summer), \$5.00 postpaid. Religious QSL samples 25¢. "Rus" Sakers, W8DED, P.O. Box 218, Holland, Michigan. Request free folder. "Your Best Contact."

QSLs of rare excellence. Samples 10¢. Dave, 601 East Maude, Sunnyvale, Calif.

QSLs? SWLs? In '59 try mine! Samples 25¢ deductible. C. Fritz, 1213 Briaracre, Joliet, Ill.

DELUXE QSLs. Petty, W2HAZ, box 27, Trenton, N. J. Samples, 10¢.

QSLs "Brownie," W3CJ1, 3110 Lehigh, Allentown, Penna. Samples, 10¢ with catalogue 25¢.

QSL-SWLs, 100, \$2.55 up. Samples 10¢. Griffith, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

QSL-SWLs, Samples 10¢. Malgo Press, 1937 Glendale Ave., Toledo 14, Ohio.

QSLs: Twenty exclusive designs in 3 colors. Rush \$3.85 for 100 (ten different kinds) or \$6.25 for 200 (20 different kinds) and get surprise of your life. Satisfaction guaranteed. Five days service. Constantine Press, Bladenburg, Maryland.

QSL Special! \$1.75 per 100 cards, postpaid U. S. only. Glossy stock, red call-letters, name and address. Green QSO information, etc. All orders mailed within 10 days. Free sample. Hobby Print Shop, Umatilla, Fla.

QSLs, Samples, dime. Printer, Corwith, Iowa.

COLOR Glamor, scenic & nature. Custom sketch and photo. Samples 25¢ refunded. K4LFZ QSLs, Summerfield, Fla.

QSL-SWLs, Samples free. W4BKV Press, McKenzie, Tenn.

QSLs, Reasonable, 10 days delivery. Catalog dime (coin). Dick Crawford, K6GJM, Box 607, Whittier, Calif.

SCENIC QSLs, New, beautiful, samples 10¢. Camus Press, 3005-VC, North Hollywood, Calif.

200 QSLs, \$3.00 samples free. Bolles, 7701 Tisdale, Austin 5, Texas.

CREATIVE QSL and SWL Cards. Are you proud of your card? If not let us print your next order. Write for free sample and booklet. Personal attention given to all requests. Bob Wilkins, Jr., KN5ZMT, Creative Printing, P.O. Box 1064-C, Atascadero, Calif.

QSL, Samples, 10¢. Refundable. Also Net Award Certificates and Membership cards. W3KJP Press, 1806 Water St., Wesleyville, Penna.

QSL Samples dime. Sims, 3227 Missouri Ave., St. Louis 18, Mo.

QSLs, Outstanding. Original. Fast service. Reasonable prices. Samples 10¢. Super Quality, 25¢, refundable. VYS QSLs, 1704Q Hale, Ft. Wayne, Ind.

QSL-SWLs, High quality, reasonable prices. Samples. Bob Teachout, W1ESV, 204 Adams St., Rutland, Vt.

QSLs, Glossy 4-colors, 100 for \$3.50. Samples, 10¢. Dick, W8VXK, 1018 Arthur, Mt. Pleasant, Mich.

QSLs, Speedy delivery. Samples, 10¢. Don, K5OWT, 738 Gardenia Ada, Okla.

QSLs, SWLs VHF's SYL-OM's. (Sample assortment approximately 95¢). Covering designing, plating, printing, arranging, mailing, eye-catching, comic, scenic, fabulous DX-attracting, prototypal, snazzy, unparagoned, cards. Rogers, K9AAB, 737 Lincoln Ave., St. Paul 5, Minn. Also glamorous, pulsating (Wow!)

QSLs, Get the best from DX, samples 25¢. 2 Kullik street, Clinton, J. Shop telephone CRegory 3-4778. Residence, GRegory, 1-7885.

QSLs: Fast service. Send stamp for samples. Koster, K2UAX Press, 2941 Ewell Place, Wataugh, L. I., N. Y.

QSL-SWLs, 100 \$2.50. Samples 10¢. QSO File cards, \$1.00 per 100. Rusprint, Box 7507, Kansas City 16, Mo.

QSLs, Taprint, Union, Miss.

SUPERIOR QSLs, samples 10¢. Ham Specialties, Box 3023, Bellaire, Texas.

QSL-SWL samples free. Bartinkoski W2CPE Press, Williamstown, New Jersey.

QSL-SWLs that are different. Colored, embossed card stock and "Kronekote." Samples 10¢. K8AIA, Turner, Box 953, Hamilton, Ohio.

QSLs: Send 25¢ (refundable) for samples. W6CMN, Schuch, 6707 Beek Ave., No. Hollywood, Calif.

QSLs Atlas Missile, 100 Glossy 4-color, \$4.00. Paye, W4ZKK, 824 Avondale, Cocoa, Fla.

QSLs, 3-color glossy, 100—\$4.50. Rutgers Vari-Typing Service, 7 Fairfield Rd., New Brunswick, N. J.

QUALITY QSLs—Best deal around. Samples and prices, 5¢. Savory Press, 172 Roosevelt Road, Weymouth, Mass.

QSLs samples, quarter. Spicer, 4615 Rosedale, Austin 5, Texas.

QSLs, High gloss, 2 colors, samples 10¢. K2VOB Press, 62 Midland Blvd., Maplewood, N. J.

QSLs: Cartoons, colors, something different. Samples, 25¢. Chris W9DPA, 365 Terra Cotta, Crystal Lake, Ill.

QSLs, SWLs, Citizen's band. Samples 10¢. Onondaga Press, Onondaga, Mich.

QSLs, Stamp brings samples. Eddie W. Scott, W3CSX, Fairplay, Md.

QSLs, 100 for \$3.00, glossy, samples free. R. A. Larson, 32 Midland Ave., Stamford, Conn.

QSLs, Samples free. Phillips, W7HRG, 1708 Bridge St., The Dalles, Oregon.

QSLs, Lapel pins, samples dime. Kephart W2SPV, 4309 Willis, Merchantville, N. J.

QSLs Neat. Attractive. Samples 10¢. Woody's, Box 164, Asher Sta., Little Rock, Ark.

HARRIS Press QSLs-SWLs. Free samples, 518 Milton St., Richmond, Va.

RUBBER Stamps: Why wait for cards? QSL with rubber stamps. Sample impressions, immediate delivery. Kay, K2CKQ, Blanchet Rubber Stamp Co., 21 Lincoln Ave., Orange, N. J.

PICTURE QSL Cards for your shack, home, etc. Made from your photograph. 1000, \$12.00. Raum's 4154 Fifth St., Philadelphia 40, Penna.

RUBBER Stamps for hams, sample impressions, W9UNY, Hamm, 542 North 93, Milwaukee, Wis.

4X150A tubes, \$6.00 each, postpaid. New, surplus, and guaranteed. H & C Sales, 343 Kenmont Ave., Pittsburgh 16 Penna. Phone LOcunt 3-1602

PRINTED Circuit transistorized mobile Vox, \$24.95; Multi-Band VFO and exciter, \$44.95; Send for list and prices. Kits wired and tested 35% of cost. K2KHJ, Dave Corsair, David Specialties, 180 Monroe St., Passaic, N. J.

TREASURE. Privateer Jean LaFette buried his treasure on Galveston Island south of the Republic of Texas. Treasure hunters will gather on June 19. Data and information available Box 73, Rite 1, Galveston.

NEW Boats. Mercury outboards. Will take ham gear on trade. Write: Boyd Retter, K0IMQ, Boyd's Marine Shop, Clinton, Iowa.

SAVE time. Save Money! DX QSL's forwarded 2¢ each after membership. Free flyer "DX QSL Co-op." Box 5838, Kansas City 11, Mo.

COMPLETE File QST's, 1915-1951 for sale. Landa, Clayton 2, Georgia.

HAM TV Equipment bought, sold, traded. Al Denson, W1BYX, Rockville, Conn.

HIGH Fidelity components at rock-bottom prices. Brand new, fully guaranteed. All ma or makes. Amplifiers, tuners, speakers, etc. Our prices can't be beat! Write for quotations. The Ham's Exchange, 228 Stephen St., Levittown, N. Y.

MOBILE Hams! Battery troubles? Les Hay, W7JWD, Rt. 1, Winlock Washington, has the answer to your battery troubles. This is genuine. No gimmicks!

S.B.B. xfrms, exact set of 3 (hermetically sealed) for W2EWL Special, brand new, \$3.00 postpaid. New compact G-E 100-watt modulation xfrmr, multi-impedance (10 lbs), \$6.25; New Elmac vacuum condenser, 12 μ fd at 32 kilovolts, \$5.50; G-E Pyranola, 20 μ fd at 1000 v.d.c. (330 vac) plus min. 4 for \$7.50; 6 μ fd at 2000 v.d.c. (660 vac) min. 4 for \$5.50; 4 μ fd at 1000 v.d.c. (330 vac) min. 4 for \$3.50. Please include postage, no c.o.d.'s. S. Tucker, W2HLT, 61-10 Little Neck Parkway, Little Neck 62, N. Y.

SELL. Tapetone 6-M Converter, 6PR-90 matching apkr. Both perfect, 4000 or separately. Make offer. K2JNS, Box 41, Beach Haven Crest, N. J.

HAMFEST June 27th Southwest from Ottawa, Illinois on Illinois Route 71 at the LaSalle County 4-H Home and Plenty Area. Same place as last year. Advance registrations accepted if in our hands before May 25th. Advance registration \$1.00, at the gate, \$1.50. A nice all-day affair for Midwest hams and their families sponsored by the Starved Rock Radio Club. Contact W9MKR, G. E. Keith, Secretary, RFD #1, Box 171, Oglesby, Ill.

CLEARANCE Sale: All must go—fixing to move! Send for picture and list of hundreds of items. Terrific discount. Brand new, never used: Gonset Tri-Band 3220 band, Lambda modulation unit, tape recorder (\$55.00); used equipment: all-band Kilowatt, two finals, 10 panel meters, Elmac P82-V, AC pwr supply, PCA-21-200 Panadaptor, Millen RDR, HF 10-20 converter, etc.; surplus equipment: BC-221 frequency meter, never touched, AR-6 receivers and transmitters, tubes 304TLA, 832S, 810s, etc. Send for complete list with prices and kilowatt picture. Make your bid—all must go! WANJE, Box 48, Lewisburg, Tenn.

DESK Call plates, plastic black or in colors, 1 1/4" x 8", only \$1.00 postpaid. Polished brass nameplate, 1" x 3 1/4", only \$1. postpaid Bill Clinchard, 120 Ellis Ave., Jackson 9, Miss.

DX35, DX40 or similar rig wanted. Ted Dames, W2KWW, 64 Grand Place, Arlington, N. J.

10B For sale. Very late model, 999, Gonset 6 meter linear, 999; P & H 600A, \$25. All F.O.B. Larry Houstau, W5IHH, 139 Park Ave., Youngstown 4, Ohio.

WANTED: 6 to 12 304TL tubes. Callanan, W9AU, P.O. Box 155, Harrington, Ill.

FOR Sale: NC-88 and 636 6-meter converter, \$80. Also Globe Scout 680, \$50. Bill Meyer, K0DGC, 211 North Third Ave., Cedarburg, Wis.

HEATH Kits assembled, fifty percent of the cost of kit plus postage. Send kit or money for kit. I'll bill assembly charge. Robert Sisson, Route 2, Hartford, Mich.

SELL Or swap: Dumont oscilloscope 205 perfect, \$35. Globe Scout 680 factory wired xfrmr, 80-4 meters, \$75; AR-6 and RA-1 schematics, 50s, W3IHD, 4905 Roanne Dr., Washington 21, D. C.

COURIER for sale! Factory-wired E. F. Johnson Viking Courier about eight months old, \$215 cash, no trade-ins. L. A. Morrow, W1VG, 99 Bentwood Rd., W. Hartford 7, Conn. Tel. ADams 2-2073.

HQ-1100, like new, \$200. Norman Mische, Phone PO 6-3510, K0TZ, 11695 Picturesque Drive, Studio City, Calif.

FOR Sale: Collins KWM-1, 12V DC and 110V AC supplies, mobile mounting tray and cables; Mark Tri-Band Heliop, 1200W, excellent. Will sell complete only, \$1100. R. H. Rotham, 710 Elm Grove Ave., Providence, R. I.

MILLEN 90881, like new, with filament xfrmr and colla, \$65. Consider teletype equipment in trade. W3BNR, 423 Lafayette, Palmerston, Penna.

WANTED: Good homebrew L.A. running KW, with or without power. Must be capable of drive from HT-32, all bands. TVI suppressed. No junk! W1LWV, 90 Water, Millisocket, Me.

FOR Sale, K348R, 115AC, Instrux box, 10 and 15 meter xtal converter, \$60; Leeco-Seville 12 volt alternator, rectifier and regulator, new, \$55; Hallifaters \$20R revr, \$35, QST 6 meter xtal with plate modulator, pwr supply, Cush-Craft 5-el. beam, mast, etc. (PCV-2 converter, \$60 a pick-up; DC-453, converted, \$15; DM35 dynamotor, \$5; power xfrmr 1900V CT, \$30 Ma. choke, capacitor and filament xfrmr, \$15; Harvey-Wells R9A with spkr, \$70. Jesse Bryant, 85 Central Ave., Poquonock Bridge, Conn.

SELL: Best offer—7544 Serial 3673; Drake 1A Serial 349, Tennalab Tri-Band beam, brand new, W9IQW.

SALE: NC-173 revr, speaker and manual, guaranteed gud cond, slick iron grey finish. Bargain, \$125. R. A. Brown, 2551 Gentry Drive, Wichita, Kansas, K/L.E.B.

FOR Sale: Best offer, excellent NC98, push-pull 813s, RF amp, pair Johnson 100 ED30, Johnson dual 50 μ fd 9000 volta, power supply 2300 volts DC, 1/2 amp., 1/2 amp. splitter choke, K51P4, 2224 47th, Los Alamos, New Mexico.

MUST Sell: TX-1 Apache xmttr. Heath factory-tested, 20 hrs. operation. Best offer over \$250. W2PFG, Sam, 40 E. Main St., Marsellus, N. Y.

BEST Offer: Elmac 304TL, 4-65A, pair 3C24s, Thorderson, 2000V transformer; Weston Triplet milliammeters; General Radio powerstat; BC-459A VFO; 600V power supply; B&W low pass filter; relays, etc. Arthur Lukach, W2DFP, 35 East 84th St., New York 28, N. Y.

NC-300 \$269, 6PR-500 \$44, KC-54 MC, 395; BC-794-B 1.25-40MC \$169; 500 183-10 \$249, Collins 5125 500KC-30.5 MC \$375; TS-17 \$75, BC-312 449, NC-98 \$89; R-9 \$75, PRO-310 540KC-30MC \$295, 75A-3 \$325, Boehme Keyer \$95, Wheatstone Perforator \$175, SX-100 \$195. Teletype printers, converters, Repetitors, All types transmitters, receivers, test equipment listed in trade for NEW Johnson, Hallifaters, Hammariund, National, Fisher HIFI, Pell Records, Write Tom, W1AFN, Altronics-Howard Co., Box 19, Boston 1, Mass. Richmond 2-0045.

ARMY TC-34 code machine, tapes, \$25; BC-1268 Panadaptor, \$38; Collins ART-13 transmitter, \$60; SCR-522 two meter transceiver, A.C. power supply, ideal for ham or C.A.P., \$95; ARC-5 receivers 9-9.1, 8-8; ARC-5 transmitters, 3-4, 4-3, 5-3, 7, \$6.50 each; receiver tuning knob, \$1.00, M1-7 modulator, \$5.50, tubes, brand new, boxed 4D32, \$22.50; 4-400A, \$36; 4X250B, \$36; 4X150A, \$10; 5933-50 7W, \$1.00; 5994, \$10; \$10, \$9.00; \$13, \$8.50; \$15, \$3.50; \$293, \$2.00; \$294, \$4.75; \$295, \$1.50. Write for other tubes. C.O.s OK. Bill Step, Box 178, Ellettsville, Fla.

CRYSTALS, Alrmaled: New crystals. Novice, Net, converter, MARS, etc. FT-243 custom finished to .01%. Any kilocycle 3500 to 9000. Hermite 1.95, FT-243, other frequencies 1700 to 21,500 \$1.95. Hermite \$2.50. Alrmaled by Elmac "828 Package" June 1958 QST—Fundamental mixer crystal set, FT-243 \$3.95, Hermite \$11.95. Matched filter sets, 7 crystals \$6.90. Write for list. We have them all. Crystals since 1953. C-W Crystals, Box 2065Q, El Monte, Calif.

HEATHKIT AR-2 receiver, excellent condition. Guaranteed. Best offer. Jon Barton, K4OCZ, 2504 Edgewood, Anderson, S. C.

SURPLUS: Cleaning house! Have a few dual 100 μ af variables, \$2.00 postpaid (same as HF-100). Also have triple tang 12.5 to 365.2 μ af variables, \$2.75 postpaid (1000V AC rated). Xfrmr, 117V AC 60C VAC inp. Out: 740V CT at 200 mils, 5V at 3 amps. Weight: 12 lbs. \$4.25 postpaid. Schaeffer, 505-45th St., Vienna, W. Va.

WILL sell \$99, \$125; SX-100, \$240; HT-20, \$260; Communicator II 2M-6V, \$160; TR-75-TV, \$30; Heathkit VFO, \$19.50; VOX, \$23.95; Kits assembled and tested. Webcor Royal Coronet, #2712 H-I tape recorder, cost \$239.95 now \$185. All equipment is in ex. cond. Interested in used KWM-1. Address all correspondence to K2JXJ, 88 Huntington Rd., Huntington, N. Y.

FOR Sale: Parts for modern KW Amplifier with pair of 4/125As, \$50; W2EWL SSB, \$40; Cardwell dual 50-7 KV, \$6.00, dual 100 KV, \$5.00 dual 500-21KV, \$5.00 (2) each; Triplet 3-in. square \$6 Ma. \$4.00; A-1 TVI suppressed all-band KW amp, with 4A00A and all power supplies in 25" rack. Write for pix and diagrams. FB, NC173 and matching speaker, \$135; 10-15-20 Presetector with supply built-in, \$20. W4NWX, Jennings, 112 Beverly Place, Gretnboro, N. C.

124 HOUR Dial for late model Hammariund receiver chokes, 50s, Ben Walker, K9AEU, 10621 East 87th St., Kansas City 33, Mo.

NAMEPLATES! Your call letters. Photoengraved, raised letters with black background, 2" x 1 1/16", .025" brass plates, for rigs, test equipment, tool boxes, doorbells, etc. Three of same call, \$1.50. Postpaid. Taxpaid. Evert Laboratories, 235 E. Jackson, Lansing 6, Mich.

NC-98 for sale, \$75 takes it. K2LZF, Box 291, R.D. #1, Greenfield Center, N. Y.

FOR Sale: 700 watt phone, 850 watts e.w., all-band transmitter. Pair 4-125As final. National 300-watt modulator with CHT Multi-Matens transformers, 2200 volt, 500 mil, 1250 volt 500 mil power supplies including control circuits, screen and bias supplies. Mounted in 6 ft. cabinet. Commercial appearance and construction. Does not include exciter or speech amplifier. Price, \$175. No shipping, sorry. W3CFJ, 308 Woodridge Lane, Media, Penna. Tel. LOwry 6-7164.

WILL Swap a limited number of 416Bs, used but in gud condx, for what you say. Ray, K5BSR, 1214 North Marks, Amarillo, Texas.

FOR Sale or swap: 4/25 amplifier with H.V. pwr. supp. and modulator. Rack mounted, fully metered; also other 3-4 meter gear, quality revr, HRO, Collins class. J. Bruscelia, W2LEC, 14 Giorney St., Shrewsbury, N. J.

WANTED: Complete printed circuit or second one, coil for Morrow Wells R9A. K6BNP, 5631 Eucalyptus Drive, Bakersfield, Calif.

SELL: 75A (one of the last manufactured) with calibration and 800 cycle alt, \$375; DX100 perfect, \$150; Hallifaters \$20R, \$40; Meissner Sign. Ext. \$20; Allstar Converter, \$10; Telex rotator, R1005, \$75; AR22 (neco gears), \$10; filter choke 30 henry, 1 amp. Sry, can't ship, \$20. Want: Vy late 754A, W6WAM.

TRADE: Kodak Medalist, filter, sunshade, Eveready case, light meter and case, large camera bag, 8 x 50 binoculars with case. All in like-new condx. Want: RME 4350A revr or Mod. 126 converter or HC-10, W1DKR, Grella, RD #3, Providence 17, R. I.

REGENCY ATC-1 converter. First check for \$55.00 postpaid. W9UJC, Bill Gibson, 5233 N. Long, Chicago, Ill.

SELL: HRO-SOT, callibrator, NBFM adaptor; Meissner 150-B; DX-40; VF-1; DSB-10 in factory carton. For details drop a card to K1GKF or K1HKS.

WANTED: Free ham equipment for high school radio club, Richard Smith, K2TBX, 1002 Eton Way, Neptune, N. J. Tel. PR 4-5051.

SEND Your favorite photo to a brother ham as a photostamp pasted on your letterhead. Send photo and \$2.00 for 100 $\frac{1}{4}$ x 1" or 50 1 x 1 1/4" stamps. Photo returned. Clyde Kellogg, Dutch Flat, Calif.

HALLICRAFTERS 8-85 receiver for sale. Absolutely new condition. Used only two hours. With plastic cover and Heath Q-Multiplier. Only \$85. Winchester Model 308 rifle; Winchester factory oil, \$85 value. Will consider trade for good transmitter. Edward Bilwin, 107 Hamilton St., Dorchester, Mass. Tel. GE 6-5009.

SELL: HQ100 with clock timer; like new. \$150. Mason Karol Edwards, 112 Cannon St., Greer, South Carolina.

GLOBE KING 500B, in exc. condx. Modulator section hardly used. First check for \$400 gets it! Goss SB, Charles Arbetman, W9RVN, 931 N. Marion, Oak Park, Ill.

FOR SALE: Hallcrafters HT32, BC221AK freq. meter, Heath Q multiplier, Miller RSR, VHF 132A, Melanor Signal Shifter, other items. Send postcard for list and prices. George A. Diehl, W2IHA, Wilson Ave., Chatham, N. J.

WANTED: Lysee Mod. 50, ant. coupler. Must be in A-1 condx with no modifications. Also antenna coupler. Must be reasonable. K1JNM, 1633 Williston Rd., South Burlington, Vt.

CANADIANS! Harvey-Weiss Bandmaster TBS-50C w/A, C. pwr. supp. and VFO, \$150; 12V mobile power supply; 500V at 250 mls, \$15; 6V G-E pwr. supp. 450V at 250 mls, \$15; Eddystone 750 revr, \$250 or your best offer. F. W. Lovain, VE2AVN, 1171 Sullivan Rd., Val D'Or, Quebec P. Canada.

TRADE: Johnson Viking Model, Gonset Super Six, Electro-Voice 210KK carbon mike, Gonset Noise Clipper, 60-watt dynamotor power supply for 800 or 1000 volt. Above plus cash on top quality revr, W5VDD, 116 North Ave., Crowley, La.

6 METER Ampex. See description in July QST. New, never used. Make me an offer. George Sperry, WAUKA, 108 Oak Hill, Portsmouth, Va.

SELL 8X99 with xtal calibrator and DB23 Prescaler. All in perfect condx, for \$165. E. B. Forest Hills, L. L. N. Y. K2GVN, Leonard Friedman, 108-43 63 Rd.

HAMMARLUND HQ-150, Hammarlund speaker, Brush headphones. Used only a few hours. Original case. I am not a ham operator but bought this wonderful set just to listen to the Spartans. Satisfaction guaranteed. Price \$210. Dr. Norman P. Scholer, Box 180, Mooreville, N. C.

HEATH DX40 transmitter for sale. 1959 model, professional wiring, 60. H. J. Stinger, K3GUN, Mendocino, Penna.

WANTED: VLF receiver, 15 to 600 KHz. RHA, RBL, BC-969, R212/SR, R212, P. Lee, 6000 Hillside, Chevy Chase, Md.

WANTED: Gonset Super Six converter. State price and condition. For sale: Heath AT-1 transmitter. Best offer W1ZHA, 77 Wetherbee Rd., Waltham 54, Mass.

SACRIFICE: NC-109, \$179.95; NC-66 with RDE-66 loop, \$148.50; both brand new, in factory sealed cartons. Full factory guarantee. F. A. B. NYC, Don Miller, W2MQB, Springs Rd., East Hampton, N. Y.

FOR SALE: Super excellent Heath DX-100, Heath SWR bridge, 1 KW Johnson low-pass filter, 100 ft. Amphenoil RO-59U, sorry, will not ship. K2YBJ, Joel Narod, 80 Clarkson Ave., Brooklyn 26, N. Y. HU 7-3919.

MUST sell new Elenco Commander linear amplifier. Never was on the air. Complete with tube and chimney. Will ship collect in U.S.A. \$500 cash. No less. C. G. Clarke, K6HRJ, Box 535, Knox City, Texas.

FOR SALE: 20A, QT1, VFO, MM2, 100 watt linear, d-104 mike with stand, coax relay, Johnson Matchbox, complete set of spare tubes, 20 meter Cushcraft ground plane and spare VFO, \$350. Also 80 and 20 meter mobile or fixed 100 watt EWL 88B xmitter, \$50. W2MHL, 147 Fairview Ave., Paramus, N. Y.

CANADIANS! Selling Collins 32V-75A3 including 35C low-pass filter, \$775; not selling separately. Package deal only. C. L. Skelding, VE2ABZ, 106 St. Louis, Lakeside Heights, Montreal 3, Canada.

DRAKE I-A Sideband receiver. Hardly used. Will deliver up to 100 miles. \$220 or your best offer. J. DuBois, 205 Nelson Ave., Peekskill, N. Y.

FOR SALE: B&W TR switch, \$14.00; Jap mike, \$4.00. Both in like new condx. Prepaid in U.S.A. W6NZ.

TRADE: Hallcrafters SX62 for a good Communications receiver with adequate hand spread coverage. J. G. Schenck, W3SWI, 223 Hillook Lane, Pittsburgh 38, Penna.

FOR SALE: Collins 75A2 with calibrator, speaker and vernier knob, \$290; 32V1 with new D-104 microphone and TVI-suppressed, both in excellent condition. W1LOP, 71 Hildale, W. Hdg., Conn.

FOR SALE: Adventurer transmitter, \$35; NC-88 revr, \$75; Bug, \$6; 40 mtr ant. and coax, \$60. All guaranteed. Tommy Howell, 2228 Vaughan St., South Boston, Va.

SELL: Trade: Must dispose of 6 mobile tube transmitters, complete in beautiful A-1 condx. Two bandswitching xmitters for 160-75-40, 25 watts input, for 12 volt cars, dynamotor compactly built-in with xmitter, \$55 each; four miniature xmitters small enough to fit in glove compartment, two each for 75 and 40 meters, for 6 and 12 volt cars, \$35 each. Following included with each xmitter: mike, xtal, dynamotor, Vibrapak, 30 ft. of new coax cable and connectors, Stan, W8QKU, 2748 Meade St., Detroit 12, Mich.

SELL: Viking II, SX-96, good condition, WIYOD, Roger Strickland, Strickland St., Portland, Conn.

COLLINS 75A1 for sale. In excellent condition: \$250 or your best offer! K4OHR, 3900 Sunset Ave., Paducah, Ky.

COLLINS KWS-1, under 200 hours logged in 2 1/2 years. Mechanically and electrically perfect; none cleaner! Unbeatable buy at \$1295, crating and shipping extra. Write or phone W2PUE, Robert N. Lewin, 28 Fenimore, Harrison, N. Y. Tel. Rye 7-3733.

FOR SALE: QST's, 1920 to 1936. Gepapa, North Grovesdale, Conn.

SELLING SX-71 revr. Used very little, fine condition. Best offer over \$100. Donald Ueber, 132 Woodbridge St., South Hadley, Mass.

C.E. 10-B exciter with VFO, Lampkin 105-B frequency meter; Eico VTM, RCA WR67A sign. gen. BF90 CD and Heath CT-1 capac. test. W8PCF.

FOR SALE: HRO-60 like new condx, 80, 40, 20, 10, 15 coils. speaker: \$425, Dotherow, K4AOZ, Rte. 1, Box 256, Adger, Alabama.

SELL: LM freq. meter, \$15; BC-453 revr exc., \$10; new BC-459 xmitter, \$10; new ARC-5 xtr, 3-4 Mhz, \$8; ARC-5 R28 revr 100-150 Mhz. exc., \$15; New 7.5 amp. Superior Variae, type 116U, \$15; new UTC trans., \$40; 12V New UTC choke S-37, \$10; new UTC choke S-38, \$10; 4 new G-E Pyranol capacitors, 2 add at 4000 volts, \$20; new Chicago plat. transr. 2790/2350 volts at 250/350 mls, \$20; used Stancor plate trans., P-8004, 1250/1500 at 350 mls, \$15; 2 BC-610 tech. manuals, 1 new TU, 1 fixed vac. cond., \$10; K2CIP, Leo W. Schubert, 44 Stanwis St., Brooklyn 6, N. Y.

TELEX 4-element 15-meter beam, AR-22 rotor, Viking II and VFO, DX-35, miscellaneous gear. Make an offer. Dan Barr, 7582 East Greenlake Seattle, Washington. Tel. LA 4-0033.

WANTED: High quality military or commercial test equipment, receivers, transmitters, tubes, etc. Will pay cash or swap. Electronics, Box 399, Mt. Kisco, N. Y.

WANT: Pair of 2" diameter seismometers, also have used meters at \$3.00 each. George J. Pollock, W3KOW.

TRADE: Exacta VX11A with 2.8 automatic lens, case, 3 close-up lenses, for Communications receiver. Preferably NC-183D or possibly SX-62A.

NC-125 w/spkr, \$120; 75 w. c.w. xmitter (QST Jan. '57), clean, should be seen, \$50; International Crystal FCV-1 2-meter converter, \$8. Bob Symons, K2N1TW, 1110 Bromley Ave., Cranec, N. J.

WESTERN Electric network and impedance matching transformer, 12 terminals. Will match transmitter-receiver to line. Supplies anti-side tone. Cost government \$11.20. Your cost, new, 2 for \$1.00 postpaid. Ralph Villers, Box 1, Steubenville, Ohio.

SELL: G-E plate voltage xfrmr, 2400 volts each side of center tap, 650 mls with 120 volts input, in steel case. Boxed for shipment, \$25; Thoradson plate voltage xfrmr, 1555 volts each side etc. w. 110 volts input, 520 watt capacity. Has tapped input winding. Boxed for shipment, \$17; Thoradson filament transformer, 115 volts input, 21.5 volts output 50 watts, \$2.00; Thoradson filament xfrmr, 105/110/115 volts input, 10 volts output, 65 watts, \$3.00; G-E mercury arc rectifier tube, 30 amps, at 100 volts (antique tube), \$5.00. Earl H. Brockway, 524 E. Third St., Flint, Mich. Phone CE 2-3636.

GLOBE Chief, 90A, for sale, \$50; Heath VFO, \$20; SM-90 mod., \$10. All for \$75. K9QUC, 1928 ave. 7, Kearney, Neb.

TAPSTONE 2 or 220 417A converter (XC-144 or TC-220) in factory sealed carton (was won in contest. Specify IF). Best offer over \$60. K2IUV, SP-8-6425, 19 Standish, Yonkers, N. Y.

DX-100, Built-in sequence keying and speech clipper. Dow T-R switch, Bud lo-pass filter, Heath reflected power meter, Vibropack bug and dynamotor, SX-42 receiver, modified cascade front end, squeak, hang AVC, etc.; Heath Q-multiplier, \$75. Heath signal generator, \$10. All aluminum quad frame (10 and 15 m) \$25. Lovelock, K2ICF, 21 Oak Hill Rd., Chappaqua, N. Y.

KWS-1 guaranteed, all modifications including automatic ALC, \$1365. Will install locally. W6QJV.

FOR SALE: SX-71 receiver, 10-15 meter converter, both in perfect condx, for \$125. K5QCF, Mike Geller, 4932 Marie Tobin Drive, El Paso, Texas.

AMATEUR Paradise vacation spot. Livingstone Lodge and log cabins, Marcomba Lake, Enfield, N. H. For couples and family groups, 100 acres, eleven buildings, main lodge, fine sandy swim beach, boats, sports, Dartmouth golf and tennis courts, churches, La Salette shrine nearby, fishing, 30th year. Amateur rig in lobby. Light housekeeping cabins. European plan, \$20 per week up. Children half price. Literature. At Q. Livingstone, W2QPN, 12-01 Ellis Ave., Fair Lawn, N. J.

FOR SALE: Collins 310-B3, excellent, \$185; 10-B exciter and QT-1, excellent, \$125; MM-1 analyzer, new, \$85; Heath GDO and Antenna scope, \$120; for \$25: 458 VFO in c.e. case, \$30, B&W 850-H R. switch, excellent, \$15. Kenyon transformer 115V/450V c.t. at 700 ma., new, \$45, power supply 2000V. dc. at 500 Ma. new components, \$70, Vibrapak, 6V/250V DC. at 90 Ma., new, \$10; Microphone D-104, new, \$10. Astatic grip-to-talk stand for D-104, excellent, \$5. Jas. W. Craig, Jr., 62 N. Huntington, Peru, Ind.

SECOND Class R. Trp w/2 1/2 yrs towards BS in physics and no experience, wants beginning in electronics, radio and/or radar operation or maintenance, anywhere. Write: W1MVI, Central Street, North Reading, Mass.

FOR SALE: Collins 32V2 transmitter, A-1 shape. Best cash offer over \$325.00 takes. A-54 mobile transmitter, \$60.00; Hallcrafters S-38D, \$32.50; Kenyon T852-2080V @ 450 ma., \$25.00, meters, 60/500 ma. choke, \$10.00; T176 choke 50/400 ma., \$6.00; meters tube and parts. Send for list. Unloading. Excess, W3BBV, P.O. Box 722, York, Pa. 76037.

FOR SALE: B&W 5100-B transmitter \$350; B&W 651 Matchmaster \$30; Electro-Voice 604 microphone with 419 stand, \$40; Viking Adventurer, \$30; Hammarlund KCT-140X receiver with crystal calibrator and speaker, \$195; Panapator 1000 V AC, \$60; AFAC with power supply for 115 VAC 60 cycle \$60. All in brand new condx and with instrux books. Robert B. Hupper, K2PLD, 47 Willits Rd., Glen Cove, N. Y.

FOR SALE: Simpson Model 303, \$25; Simpson Model 260, \$27; Eico Bar Generator Model 352, \$10; Eico scope Model 425, \$30; Eico Signal Generator Model 315, \$30; RME Model D622A, \$38.50. George Ulrich, K9DNS, 308 So. 15th, Mt. Vernon, Ill.

SELL: Eldico 88B Jr Exciter, ideal for portable or Field Day use on 75' phone, \$49.50. Also have Johnson 250 watt Matchbox, \$35. K2DN, Marcelus Drive, Westfield, N. J.

20A with QT1 and Deluxe 458 VFO, 160 through 10 meters, all factory-wired. Guaranteed factory new condition. Gray hammetone or gray crackle rackpanel or deduct \$7.50 and purchase your choice from factory. Complete, \$235.00. Shipped in original factory box with manual. Advance coax relay, 115V AC, \$6.50; Advance Relay twin-lead ant. relay 115V AC coil, \$6.75; Hy-Gain 58DC all bands double traps, \$6.75 with manual; three DM355 dynamotors, input 12 V DC, output 225 VDC at 225 Ma., \$7.50 each or 10 for \$70. Check or money order accepted. No C.O.D. Clyde Herrington, K4BMC, 4401 Charleswood, Memphis, Tenn.

FOR Sale — Sacrifice! Johnson Viking II and Heath VFO, \$130: HQ-140X, \$170; Bud low-pass filter, \$10; CDR rotor with 100 ft. cable, \$20; 15 meter beam, \$25; speaker and cabinet, \$25; total \$360.00. Will sell separately or the first \$325 takes all. Jeffery Lehman, K2GQX, 25 Salem Road, Roslyn Heights, L. I., N. Y. Tel. Mayfair 1-2303.

IBM Electric mill (see p. 452 Montgomery Ward catalog), \$100 or all-band rev. Also TBS-100 watts meters, \$60; Mon-Key, \$19; AVT-112 xmitr and pwr supply, \$20; 3-watt 40 meter xmitr 60 cps, \$15; Juke box amp, \$15; Qser, \$8; Leeco-Neville 6V gen., \$25; pulse gen., 60 cps, \$15; 30471, 4-125, 15 KVA xfrmr. Delivry \$50 or more in North Ill. Wilson, WORN-L, 3113 S. Main, Rockford, Ill.

WANTED: Clean Johnson Matchbox and Signal Sentry. WIDY, Box 297, South Yarmouth, Mass.

SELL: NC-88 & QF-1, \$90. F.o.b. Portah, KOCMT, 2342 Thor, Racine, Wis.

WANTED: HQ-110, in gud cond, with spkr, manual, R. E. Mitchell, Box 95, Lafayette, W. Va.

SACRIFICE! NC-88 rev. Better than better condx, \$75. W1FGF, WY ARRL, W. Hfd, T. Conn.

WYOMING Hamfest July 25-26, Ham vacation in beautiful Big Horn Mountains. Information, W7QPP.

DELUXE Call Letters: engraved polished black phenolic laminate, 2 1/4" white letters on 3 1/2" x 14" x 3/16" beveled blank, \$1.75 P.P. J. Muddle, WSLW, 3701 Germantown, Philadelphia 2, Ohio.

Any Guns wanted! Will trade ARC-58, radio control airplanes, drafting instruments, slide rule, stamp collection, AR-22, 12V CT, 200 mill pwr supply, 100/80/8U, BC-375 parts and tubers, antenna tubers, hundreds of tubes and parts. Send for list. Oscar Bailey, Box 374, Milford, Delaware.

DX-100, \$175; HQ-100, \$125, both guaranteed excellent. New AR-22, \$20. Oscar Bailey, Box 374, Milford, Delaware.

HAMMARLUND HQ-150 and speaker, duomate keyer AKS-7, Hy-Gain AV 14 vertical and two other antennas, 52-75 ohm low-pass, Morse SWR, Ham, B4V beam, NC-300, stal calibrator, six and two meter converters, \$290. New BC620H VHF transceiver, \$60.00. Dr. Alan York, 35 Main St., East Hampton, L. I., N. Y. EA 4-1024.

New Custom xrtor, 120-240/1000 to 2500 in 200 v. EA 4-1024 at 1 amp. Make offer. Trades considered. WSDMC, 7541 Windling Way, Brecksville, Ohio.

SELL: Gonset G-66 with 12-120 V power supply \$175; PE-103 less base, \$12.50; Viking II, \$135; WRL VFO, \$35; R-388 Collins S1J2, best offer over \$350 by the 15th; BC-610E refinished, \$200; BC-610G refinished and shielded new tubes, coils, 50-40-20. Will accept trade but prefer pick-up. Motorola FM 30-40 Mc rec. trans. \$25. All F.o.b. Lexington, Ky. W4NCQ, 404 Dover Rd., Lexington, Kentucky.

150 Watt all band fone c.w. transmitter, \$40; Sonar 6 and 10 meter mobile transmitter, \$15; 6 watt power supply, filtered, 600 watt at 150 miles, \$15; Bud antenna \$5; Bud antenna coupler, \$5; Command transmitters, \$5 each; Tenna rotator control, \$5; 10 watt P. A. amplifier, \$7. You pay postage. Gilenson, W0ERQ, 1210 West 31st St., Topeka, Kansas.

SELL DX 100B, \$185; HI-32, \$550; new 4CX100A and Elmac SK500 socket, \$150; parts for compact ARI KW 4C1000A, Nov. 1957 QST, B&W 582 and 850 coils, \$25 each, 20-675 10 kv. variable vacuum condenser, \$25; Cardwell 1000 ufd, variable, \$10; GG kv amplifier (April 1957 QST) with 4-250A's, \$100; Elmac 4-250A, \$20; 1500V, 500 Ma. pwr supp., \$35; 2500V, 1 amp. power supply in new Bud 3 1/2" cabinet, \$100; many 3" meters, \$5.00 ea. New 872 tubes, \$2.00 ea., many fil. transformers and condensers. Joe Shank, Jr., W8KBT, Box 1486, Huntington, W. Va.

SSB: Central Electronics Model "B" Sideband sller and Model "A-1" 156 Kc. L.F., \$50. C. L. Ray, 1019 Sussex, New Haven, Ind. SSB Lattice FT-241A crystals, 100 chs. Guaranteed available channels 0 to 39 53 to 69 — Minimum order, \$5.00. Postpaid. U.S.A. Quaker Electronics, 1040 West Main St., Plymouth, Penna. 67 ft. commercial heavy galvanized hinge base tower, 10 ft. sections, suitable for heaviest bases, accommodate prop-pitch motor. Complete with galvanized guys and insulators. F.o.b. my QTH. Will ship anywhere. Highest offer buys. W3ITW, 39 High St., Pottstown, Penna.

COMMAND Set: 2 meter 10 tube Superhet. Surplus receiver for used condx, but never used by me; complete with all tubes; \$13.95. Will ship if you will pay the postage. J. Reifer, W2ABQV, 162 Woodcrest Blvd., Kenmore 23, N. Y.

WANTED: Collins 75A1, in any condx. Paul Elliott, W5GCV, Rte. 2, Bishop, Texas.

FOR Sale: HQ-110C/spkr, mint condx, \$225; Viking wanger, Gud shape, \$210. F.o.b. your QTH. Mike Deal, KNTGCK, 8405 So. 118th St., Seattle, Wash.

SELL: BC610E, complete for \$125.00 with coils and speech amplifier and spare set of tubes, converted for 10 meter, or will trade for gud revr or what you have. Make offer. E. R. Arms, W9PBL, Harrisburg, Ill. RR 1.

BEST Offer! Parts from Revr shown in "How to Become a Radio Amateur". Transformer, tubes, chokes, etc. Cost \$50 originally. Kathy Blume, Sauk Trail, Mt. Vernon, Ill.

DX-10 and VF-1, in excellent physical and electrical condx, only \$60. K0DKP, Rte. 1230 S. Geve, Kirkwood 22, Mo.

CANNON 35 MM camera, with 11.9 lens for Novice gear or what have you? M. Grossman, 443-B Orange Grove Circle, Calif.

DX-20, \$30. Made General. Allen Marks, 732 East 250th St., Euclid 32, Ohio.

SALE! Moving to new QTH. 10M beam with rotator, 20M beam with stub tower, 100' mast, 30 ft. and 50 ft. towers. Fred Kloppeier, W0FON, Lawrence, Kan.

RANGER Transmitter with crystal mike and SX-99 receiver, all in A-1 condx, for 250 dollars. W21FR.

SELL: Heath SB-10, SSB adapter, \$85. Postpaid anywhere in U. S. KG5AG, Clyde Robbins, Box 41, Navy #115, FPO, New York, N. Y.

FOR Sale: Morrow MBR-5 receiver, MB-560 xmitr, RVP-250 pwr supply. For \$300. Will ship express collect. Contact K9EJH, 126 S. Chase Ave., Lombard, Ill.

FOR Sale: Central Electronics 20-A with or without amplifier. Preston Harris, 600 Sillas, Sweetwater, Texas.

CANADIANS: KWS-1 complete commercial grade power supply, \$1250. VE2J3, Millar, 78 Dahila Ave., Dorval, Quebec, Can.

JOHNSON KW with desk, in exc. condx, \$1095. Lewis West, W0AIO, Wehita, Kansas.

LATE 1958 Viking Ranger. On air less than 25 hours. Going straight off, or possibly SSB. Direct your offer to P. O. Box 346, Beatrice, Nebraska.

WANTED: McMurdo Silver 703 bandpass or B&W 504 frequency multiplier or similar. W0PHA, Bird Island, Minn.

SELL: Gonset Commander II xmitr, 6V dual vibr. supply, 110V supply, coils 160M thru 6M. In exc. condx, \$120 f.o.b. K8LAR, 306 West St., Three Rivers, Mich.

FOR Sale: DX-40, \$55; Super Six, \$30; 10M Heilwhip with base mount, \$10; Bud code oscillator, \$8. W8OFF, 304-S N. Roosevelt Ave., Columbus 9, Ohio.

WANT: Six meter mobile transmitter. Best offer takes 5' ovaloscope and Eleo signal tracer. Will consider six meter gear in trade. Bernie Nickles, 316 Hampton Ct., Lexington, Ky. K4HPY.

Viking Ranger, 2 years old, barely used; first body to show \$160 cash takes it. Am tired of waiting for friends. Merton Conn, 130 Hicks St., Brockton, N. Y.

SELL: Heathkit Mohawk RC-1 receiver w/speaker and 100 Kc calibrator, perfect condx, \$250. K6LXY, 44626 N. Rodin Ave., Lancaster, Calif.

FOR Sale: Gonset Super Six, \$35 postpaid. Arnold Lemmers, Leil Rapids, South Dakota.

SELL: Globe Champion, factory-wired, \$350 and SFA-100, \$200 or best offer. WIDBA, Route 3, Box 237, North Scituate, R. 1.

FOR Sale or Trade: 800W c.w. 400W A.M. 1250 v. PEP, GG dual with built-in pwr supply using four 837s and four 866A tubes — \$90; New Heath Mod. transformer, \$4; new WRL power attun., \$7; two 805 tubes, \$37 tubes. Will sell or swap for gud used revr or 500w. antenna tuner. K4MTB, Doyle Owens, Box 173, Fritch, Ariz.

FOR Sale: Gonset Communicator IIB, two meters, six volts, with Gonset VFO, \$190; AT-1 with AC-1, \$25; VF-1, \$17; Gonset Long-John beam, \$18. Wayne Stahnke, K6BFA, Box 243, Cloverdale, Calif.

RECONDITIONED Equipment: New Guarantee! Mobile the inexpensive WRL Super-6 \$39.50; G-66 \$149.00; Communicators \$125.00 up; TBS 50's (specify low or high impedance microphone) \$67.50; Viking mobile \$79.50; MBR-5 \$159.00; MB560 \$159.00; ASH \$85.00; ARF \$139.00; PMR6A \$79.00; PMR7 \$119.00; AT-1 \$59.50; MFC-55 \$39.50; SRT-120 \$99.00; R-125 \$159.00; \$5.00 up. Tons of fixed station equipment! DX35 \$125.00; VF-1 \$119.95; Q multiplier \$8.95; Pacemaker \$385.00, 6V2 \$129.50; Scout \$39.50; Scout \$84.50; Chief \$90 \$44.50; King 500 \$399.00; King 500 \$425.00; 755VFO \$44.50; King 500 \$399.00; plus hundreds of receivers. Terms, trains, trades. LEO-W0GQJ, WRL, Box 811, Council Bluffs, Iowa.

BARCAINS: Reconditioned and fully guaranteed, HQ-100 \$139.00, HQ-129X \$158.95, HI-33 new Demo, \$550.00, Heath Q Multiplier \$34.95, NC-300 \$279.00, KWM-1, 75A1, 75A2, NC-183D \$299.00, Globe Chief 90 \$44.00; Super Pro \$94.50; Globe Scout 680 \$89.95; HI-18 \$39.95; RME-84 \$59.95; Lyco 600 \$59.50; Knight 50 Watt \$29.50; National 100 \$44 \$54.95; AF 67 \$139.00; PMR 6A \$79.95; Harvey Wells T-90 \$128.95; Globe King 275 \$179.00; Central Electronics 20A \$189.00; Side Band Sillers \$59.00; Heath AT-1 \$22.95; Hallcrafters \$83 \$49.00; KWS-1, Morrow MBR-5 \$159.00; MBS 60A \$159.50; NC-88 \$59.95; 32V3 \$450.00, 32V2 \$349.00; Globe King 500A \$425.00; HQ-140XA \$189.95; NC-109 \$179.95. We trade new and used. Write Ken-Bud Radio Supply, 425 Central Ave., Fort Dodge, Iowa, or "Red Star", Cedar Rapids, Iowa.

HEARING AID, "Radioear" (transistor, eyeglass model, 80 stereo, perfect, used six months. Trade for xmitting gear. What have you? W9KZD, Ashland, Ill.

SELL: Viking II, factory-wired. Equipped with push-to-talk, \$200. F.o.b. WIMJ, 58 Feich Rd., Natik, Mass.

WANTED to buy: 4-5 or 6 element 20 meter Telrex beam. Tony Craig, 1653 Taylor Ave., Racine, Wis.

COLORADO Ham Directory. Over 2000 amateurs cross indexed by call, name, QTH with phone numbers, 64 pages \$1.00 postpaid. Denver Radio Club, Box 356, Denver 1, Colo.

KITS Wired — Repaired. Quality work, low cost. Smith, W4NBV, 4305 Landon Drive, Knoxville, Tenn.

WANTED: RME DB20 Preselector, Clint Mollitor, W7ITK, Box 551, Edmonds, Wash.

HQ-100 w/c and speaker, \$135; Knight 50 watt xmitr, \$30. Both are in exc. condx. James Simons, Jr., 906 N. Royal Ave., Florence, Alabama.

CAPACITORS: 120 ufd, 3000V oil-filled, used OK, \$35. W8LTF, 831 Antoine St., Wyandotte, Mich.

FIRE Extinguishers, 20 year guarantee, \$5.00 each. Erwood, K9AAU, 2823 Lyndale, Chicago 47, Ill.

GLOBE-KING 500B R.F. section 4-400 final, \$350.00. VE5VL, Sub #1, Saskatoon, Sask, P. Canada.

SELL: Hallcrafters S-38, gud condx, \$20; New RK-1D32, \$20; Have 2 each of the following: 829-B, \$8; 895, \$4; 6146, \$4; 9003, \$1.50; 5670, \$1.75; 2E26, \$2.00; used; 4-125A, \$5. Earl Stodden, K3ICM, 5495 Library Road, Bethel Park, Penna.

"PIG-IN-A-POKE"? Not if you visit Ham Headquarters, USA and see and choose from the hundreds of "Like-New" bargains in the world-famous Harrison Trade-in Center. More for your money, because tremendous turnover makes lower overhead! Terms, trades, send postcard for mouth-watering photograph and price list Q-6.

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FOR Sale: Perfect HQ-150 revr with speaker. Guaranteed. \$200. Gary Tighe, 2909 W. Oak St., Sioux Falls, S. D.

DX-20, year old, in excellent condition, \$33.00 postpaid; Gotham V-80 antenna, \$11.00. Money-order or bank check. Robert Fowles, KIDMO, 154 Field Ave., Auburn, Me.

NBNV Selling out: Ranger, \$175; Deluxe P.P. 701-A ph/cw/sb, KW final, \$150; 2 Kw plus pwr supplies, \$75 and \$95; Prop-built r/r/r/r, relay, selsyn, converted, complete, \$35; 3-d. Tel-rx 20M, \$100; K/W 510 modulator, \$85; 40 ft. Winebarger tower, \$75; 7 ft. enclosed rack, \$50. Many misc. items: CDR TR-2, Globe Scout 600; tubes, chokes, meters, mikes, oil condensers, xfrms, etc. Stamp appreciated for list, 4305 Landon Drive, Knoxville, Tenn.

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SSB 20A exciter, Central Electronics VFO, plus large amplifier, 4 each 6146 in parallel about 500 watts, neat construction with built-in scope, \$400 package deal. DX-100 superbly constructed by exacting radio engineer. Mechanically and electrically perfect. Well worth \$185. HQ-170 revr w/clock, new cond. In exc. cond. \$130. Revr HC-348 AC. Nice cond. \$10. Sry. cannot ship and equipment. George Mahland, W2JH/H, 23 Locust Ave., Eatontown, N. J. Tel. LI 2-2166.

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FOR Sale: Viking Adventurer with Eldico AM-40 modulator. Best offer. Gibson Anderson, K5BTF, Rt. 3, Box 178-A, Pine Bluff, Arkansas.

WANTED: KWS-1 transmitter without power supply. State price, cond and serial number. For sale: Two 4-400A tubes, unused, \$25 ea. Three condensers, 1 adf, 6000 volts, used, \$2 ea. Ronald White, W6LMC, 210 Alden Rd., Hayward, Calif.

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WANTED: Late model DX-100 in gud cond. Will pay cash. Write full particulars to W7AQX, W. E. Brownfield, 2424 SW Sheffield St., Portland 1, Oregon.

SELL: Heath antenna impedance meter AM-1, \$12.50; Deluxe 6 ft. Bud rack (no door), \$30; 6 ft. open rack, \$15. All postpaid. R. E. Neal, 425 South Edgemont Circle, Huntsville, Ala.

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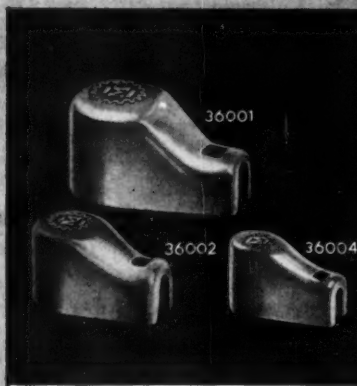
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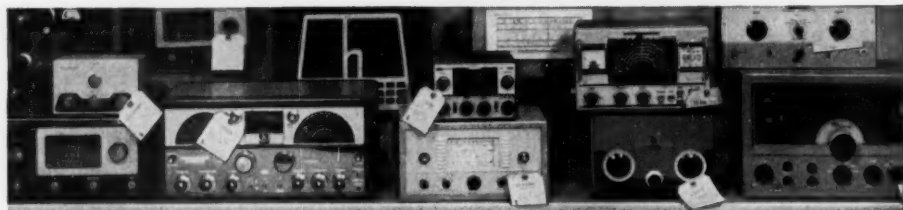
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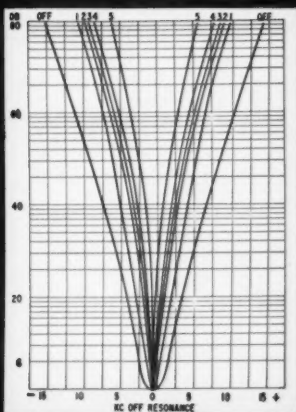
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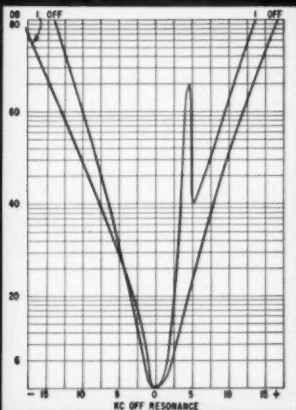
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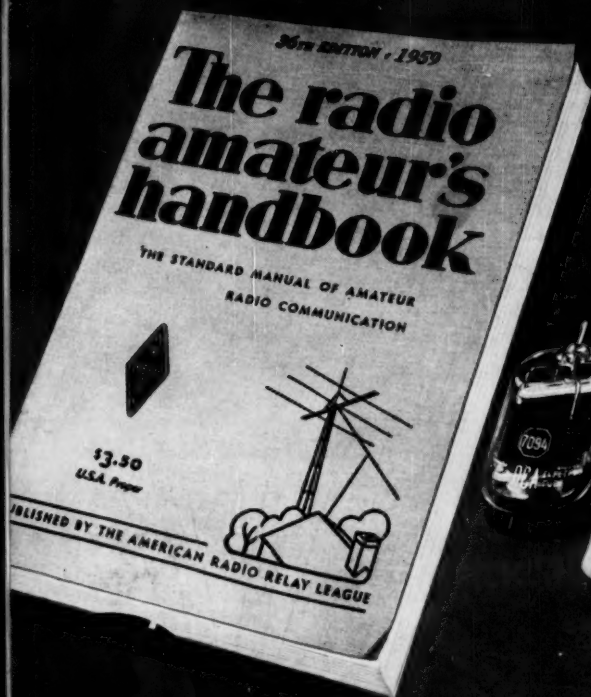
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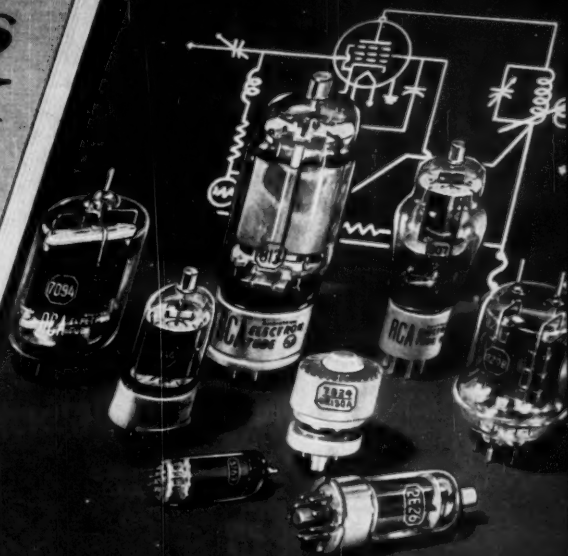
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